Rock Products

THE INDUSTRY'S RECOGNIZED AUTHORITY

JULY • 1959

WILLIAMS REVERSIBLE IMPACTOR

- 100% Impact Reduction
- No Friction Or Abrasion
- Unobstructed Discharge
- Less Upkeep Expense

Internal view showing manganese steel impact blocks, hammers and liners. Rugged, heavy steel plate construction. Extra large shafts are mounted in oversize bearings sealed in self-aligning housings.

Unequalled For Secondary Grinding

Reduces limestone and material of similar hardness to 1½", ¾" or smaller. Properly adjusted, the Williams Impactor makes excellent material with the proper percentage of fines for road base course. Unusually low upkeep expense as reduction is 100% by impact. Material is fed to enter between the hammers and is thrown against the impact blocks setting up a repeated ricochet action which accomplishes the reduction. Adjustable impact blocks adjust for wear. A reversing switch on motor permits rotating hammers in either direction, to the left today and to the right tomorrow, thereby giving double hammer life. No grates are used. Entire bottom is open permitting unobstructed discharge of crushed material and less wear and tear. A size for every job. Let us tell you about one for your use.

WILLIAMS PATENT CRUSHER & PULVERIZER CO.
800 ST. LOUIS AVE. St. Louis 6, Mo.

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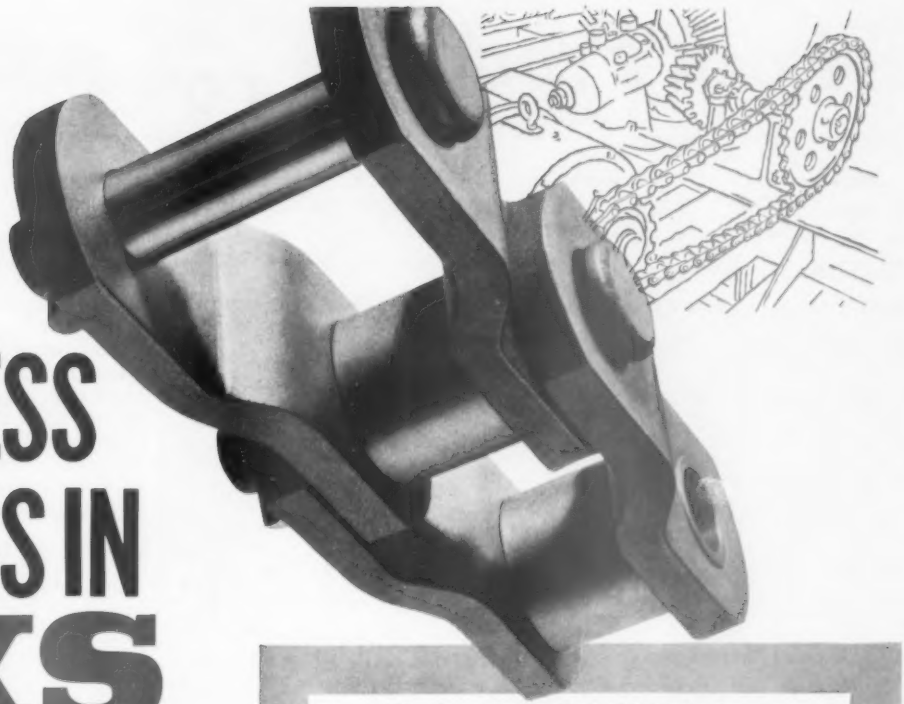
WILLIAMS
CRUSHERS GRINDERS SHREDDERS
Oldest and Largest Manufacturers of Hammer Mills in the World



FAR LESS STRESS IN LXS

THE CHAIN WITH NO "STRESS RAISERS"!
Link-Belt LXS brings long-term economy and efficiency to the most punishing drive and conveying jobs. With its "FULL-ROUND" design, LXS has no stress concentration points . . . none of the sharp corners which frequently shorten the life of many ordinary chains.

LXS is available with straight or offset sidebars. For details, contact your nearest Link-Belt office or authorized stock-carrying distributor. (See CHAINS in the yellow pages of your phone book.) Ask for our new, comprehensive Catalog 1050.

LINK-BELT

CHAINS AND SPROCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World. 15.084

They're all of "FULL-ROUND" design

PINS BUSHINGS SIDEBARS

"FULL-ROUND" design eliminates traditional stress concentration points in Link-Belt LXS . . . provides maximum live bearing area between pins and bushings. Result: stress is distributed evenly.

Other LXS long-life features include controlled press fits plus use of selected steels and controlled hardening of all parts. All this contributes to greater uniformity, greater endurance.

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Rock Products

Vol. 62, No. 7

JULY 1959

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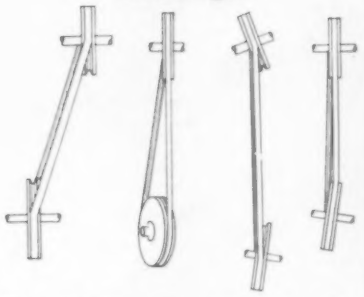
B.F.Goodrich

V belt briefs

TIPS ON THE CARE, MAINTENANCE AND SELECTION OF V BELTS FOR INDUSTRY

Belts that go straight live longer



When V belts enter and leave the pulley grooves at an angle, it causes the sides of the belts and pulley sidewalls to wear excessively. This condition can be caused by drive shafts that aren't parallel, by sheaves that are out of line, by wobbly sheaves, or by a bent drive shaft.

Simple instructions on how to make sure that the drives are parallel, and to check for wobbly sheaves or bent drive shafts can be found in the B.F.Goodrich V belt maintenance manual. Ask your B.F.Goodrich distributor for a copy.

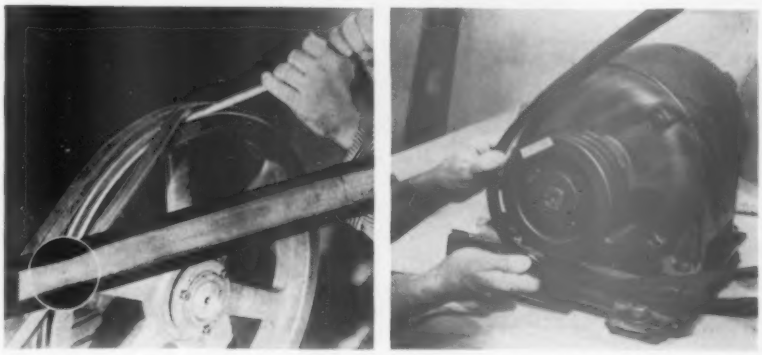
What do V-belt sizes mean?

V belts are marked with a letter which indicates their width across the top and a number to indicate their length. Standard belt widths are coded: A, B, C, D and E.

Here are the belt cross sections and minimum recommended pitch diameters to obtain maximum V-belt life.

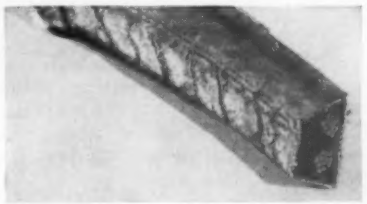
Section	Recommended Range of Small Sheave Diameters (Inches)	Absolute Minimum Pitch Diameter (Inches)
A	3.0" to 5.0"	2.6
B	5.4" to 7.5"	4.6
C	9.0" to 12.0"	7.0
D	13.0" to 20.0"	12.0
E	21.0" to 28.0"	18.0

Which is the right way to install V belts?



V belt at left is not being installed correctly. When a belt is forced into the sheave with a screwdriver or any other wedge, the outer fabric is often ruptured and cords broken. To install V belts correctly, move driver unit forward so belts can be slipped easily into sheave groove without damage.

What caused this V belt failure?



Answer: There could be several causes: Severe back bend idlers, improper storage, or excessive ambient operating temperatures. To prevent, check storage conditions. If back bend idler cannot be avoided, figure number of belts again with additional service factor. (See B.F.Goodrich Multi-V belt handbook.) Avoid ambient temperatures over 150°.

Here's why Grommet belts grip better

See all the rubber surrounding the twin grommets in this B.F.Goodrich belt? It has more rubber in relation to belt size than any other belt. Grommets are cord loops made like twisted cables, except they are endless. Because these grommets are endless, have no stiff overlapping cords, they are more flexible, grip the sheaves better. Size for size, Grommet belts give ⅓ more gripping power with less slip.

Ask a factory-trained specialist

For help in selecting V belts for any kind of service, call the man who is a specialist in V belts—your B.F.Goodrich distributor. He can help you cut costs by getting longer life from your V belt drives. *B.F.Goodrich Industrial Products Co., Dept. M-629, Akron 18, Ohio.*

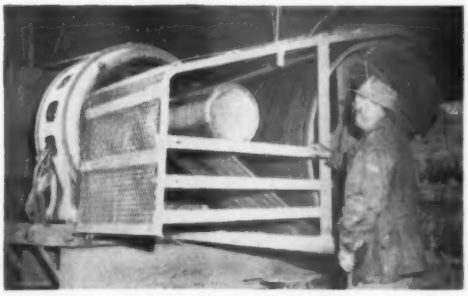


Photo courtesy of West Virginia Brick Co., Charleston, W. Va.

Mixing clay for bricks batters V belts—Dust, dampness and terrific shock loads were wearing belts out in a hurry at this brick plant. The belts drive a machine which mixes thick clay and extrudes it as bricks. Because B.F.Goodrich belts were giving good service on other installations, the plant superintendent tried them on this machine. That was over 1½ years ago. Belts are still going strong, show little wear, required a minimum of maintenance.

B.F.Goodrich V belts

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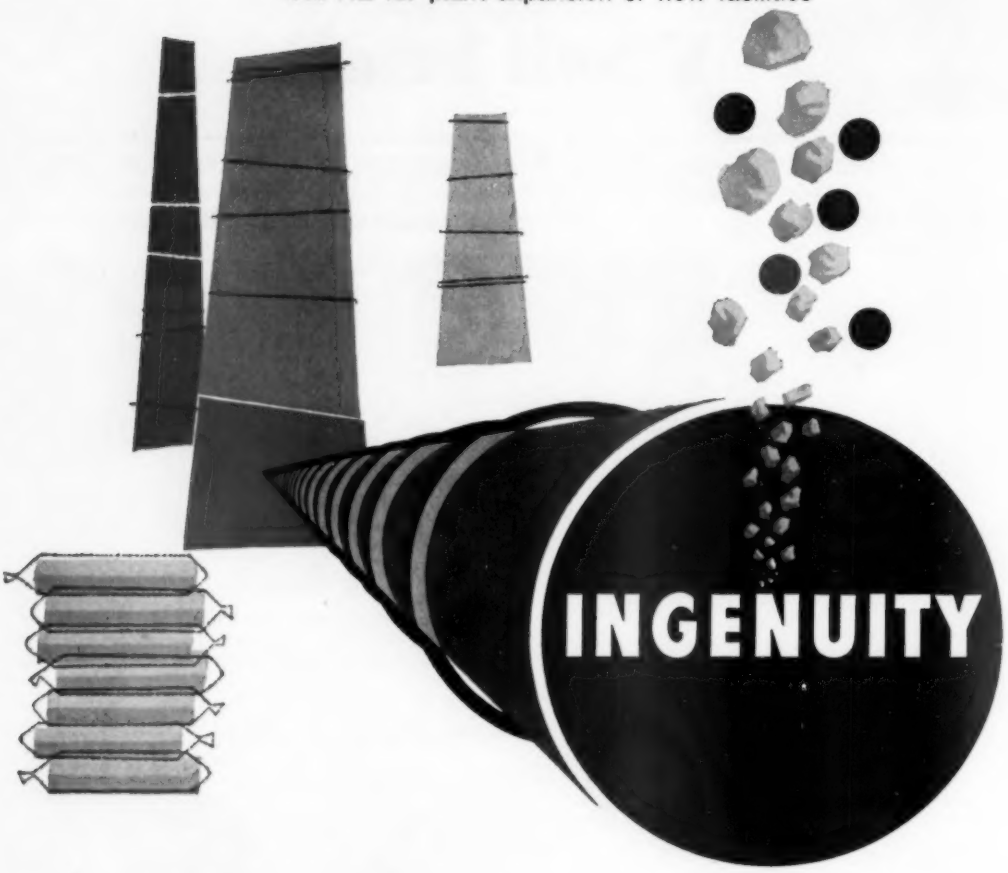
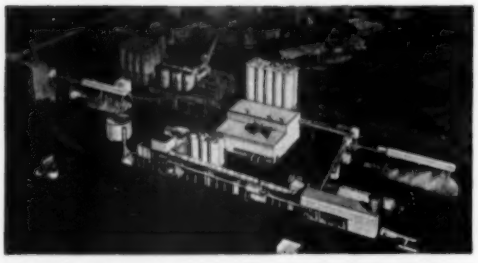
call KE for plant expansion or new facilities





1,250,000 barrel cement plant addition recently completed by KE for Marquette Cement, one of world's largest cement producers.

has made KE a major engineer-contractor serving the Minerals Industry

Placing of four fully-lined mills in a few hours instead of days—a unique center pier kiln drive—a 2,700' cement transport "airway." With these and many more planned innovations and short-cuts, Kaiser Engineers completed Marquette Cement's Cape Girardeau plant expansion quickly and economically. Construction cost and time were well below industry average.

Mining, transportation, beneficiation, materials handling, processing in cement, gypsum, coal, ferrous and non-ferrous metals facilities—these are but a few of the fields wherein KE serves the Minerals Industries—from economic analysis through start-up.

KE ingenuity—multi-industry experience, keenly applied—can benefit your next facility. Let us show you how.

KAISER ENGINEERS engineers—contractors
Contracting since 1914

Division of Henry J. Kaiser Company • Oakland 12, California • New York, Pittsburgh, Washington, D.C., Buenos Aires, Calcutta, Dusseldorf, Montreal, Rio de Janeiro, Sydney, Tokyo

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Enter 1440 on Reader Card

NOW IT'S NINE NORTHWESTS for the BLUE DIAMOND CORPORATION Los Angeles, Calif.

30 YEARS OF SERVICE and still going strong!

◆ The picture above shows an old veteran Model 5 Northwest bought 30 years ago by the Blue Diamond Corporation of Los Angeles, Calif. Beside it is a new Model 6, the ninth Northwest bought by this well-known California supply dealer.

Thirty years is a long time and it is not through yet. When the Model 6 takes over, the old machine is to be mounted on concrete and is expected to give *10 years more service*. We built 'em tough in those days—but they are tougher today.

Go through the whole Northwest Machine—any model from the big 95 to the Model 25-D! Booms!—sturdier for workhorse lifting—Uniform Pressure Swing Clutches for smooth swinging, and accurate spotting...cool running, trouble-free!—the "Feather-Touch" Clutch Control with the "feel-of-the-load", free of the complication of delicate mechanisms, valves, pumps and compressors,—a choice of Boom Hoists including the Northwest Independent High Speed Boom Hoist, a rugged unit capable of trouble-free service in hour-after-hour operation—a wide range of other equipment including Pivoted Gantries, Removable Counterweight, Sectional Boom Hoist Rigging and Pendant Lines, Telescopic Boom Struts, Adjustable Jibs, extended Boom Point Sheave Shafts, and 3rd Drums that make possible three load lines.

Add to this that Northwest quality of "always being ready to go." *We hear it everywhere and Northwest users will tell you so.* It's the big reason why Northwests are money makers.

NORTHWEST ENGINEERING COMPANY
135 South LaSalle Street • Chicago 3, Illinois

Mr. Charles D. Johnson operator of the new Model 6 was formerly the operator of the old Model 5. He says, "I have been a crane operator for Blue Diamond Corporation for five years and formerly operated their 30 year old Model 5 Northwest. What I like best about the new Model 6 is the "Feather-Touch" Controls. Still, maybe the brakes are the best feature—so smooth and soft. Another thing I like is the Murphy engine—it supplies plenty of power. You can't bog it down—I've tried!"

NORTHWEST

Always Ready to GO

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS	CRANES	DRAGLINES	PULLSHOVELS	TRUCK CRANES
¾ Yd. to 2½ Yd. Capacity	13-Ton to 50-Ton Capacity	¾ Yd. to 3 Yd. Capacity	¾ Yd. to 2½ Yd. Capacity	25-Ton to 35-Ton Capacity

Why maintenance men breathe easier. . .

DYNALOGS* have

no slidewire • no balancing motor
no batteries to standardize
NO MAINTENANCE

With Dynalog Electronic Recorders and Controllers, maintenance men are free from the hazards of sticking electrical contacts and worn slidewires . . . free from routine lubrication and cleaning of balancing motors, periodic standardizing, and replacement of batteries. No wonder maintenance men breathe easier!

One reason for this unequaled freedom from maintenance is the simplicity of Dynalog design. In the entire balancing mechanism, there are only four moving parts — none moving faster than the pen. And Dynalogs are free from gears and cables found in conventional bridge-type instruments.

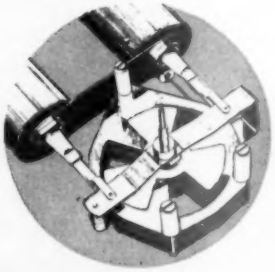
Freedom from maintenance is just one of the many important advantages of Dynalog instruments. They're accurate to ±¼% of scale, sensitive to 1/100% of scale, and have pen speeds as fast as 1 second over the full scale. And all Dynalogs are available with pneumatic or electric Control — providing fast measurement response with highly sensitive control action.

Dynalog instruments are ideal for measurement and control of cement slurry flows, kiln and stack temperatures, as well as the weighing of all dry ingredients. Get the complete story in Bulletin 20-10. **The Foxboro Co., 837 Neponset Ave., Foxboro, Mass.**

*Reg. U. S. Pat. Off.

The heart of Dynalog superiority

It's a simple variable capacitor! Taking the place of the conventional slidewire, it gives absolutely stepless balancing, with unequaled sensitivity and freedom from maintenance.



FOXBORO
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DYNALOG ELECTRONIC INSTRUMENTS

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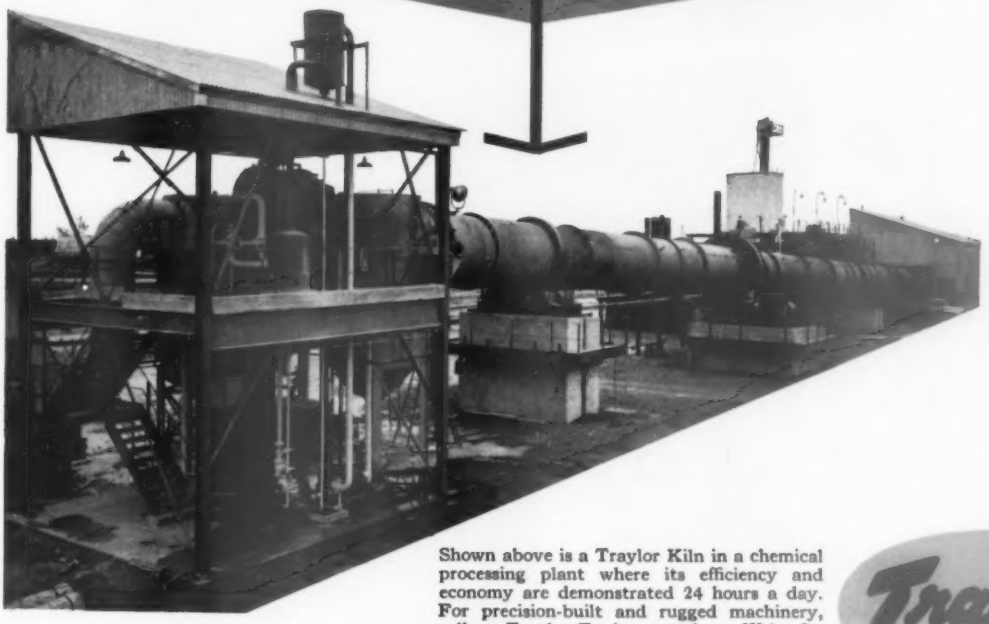
Traylor·made rotary kilns

Known the world over for dependable efficient operation, Traylor Engineers are your guarantee of machinery designed to meet your needs.

8'-0" x 150'-0" Rotary Kiln in a portland cement plant.

12'-0" x 325'-0" Rotary Kiln in a chemical plant.



Shown above is a Traylor Kiln in a chemical processing plant where its efficiency and economy are demonstrated 24 hours a day. For precision-built and rugged machinery, call on Traylor Engineers today. Write for Bulletin No. 1115 for more on Traylor Kilns.

Traylor

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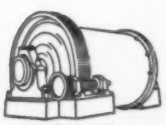
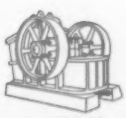


BALL MILLS

ROTARY KILNS

APRON FEEDERS

PRIMARY GYRATORY CRUSHERS



JAW CRUSHERS

SECONDARY GYRATORY CRUSHERS

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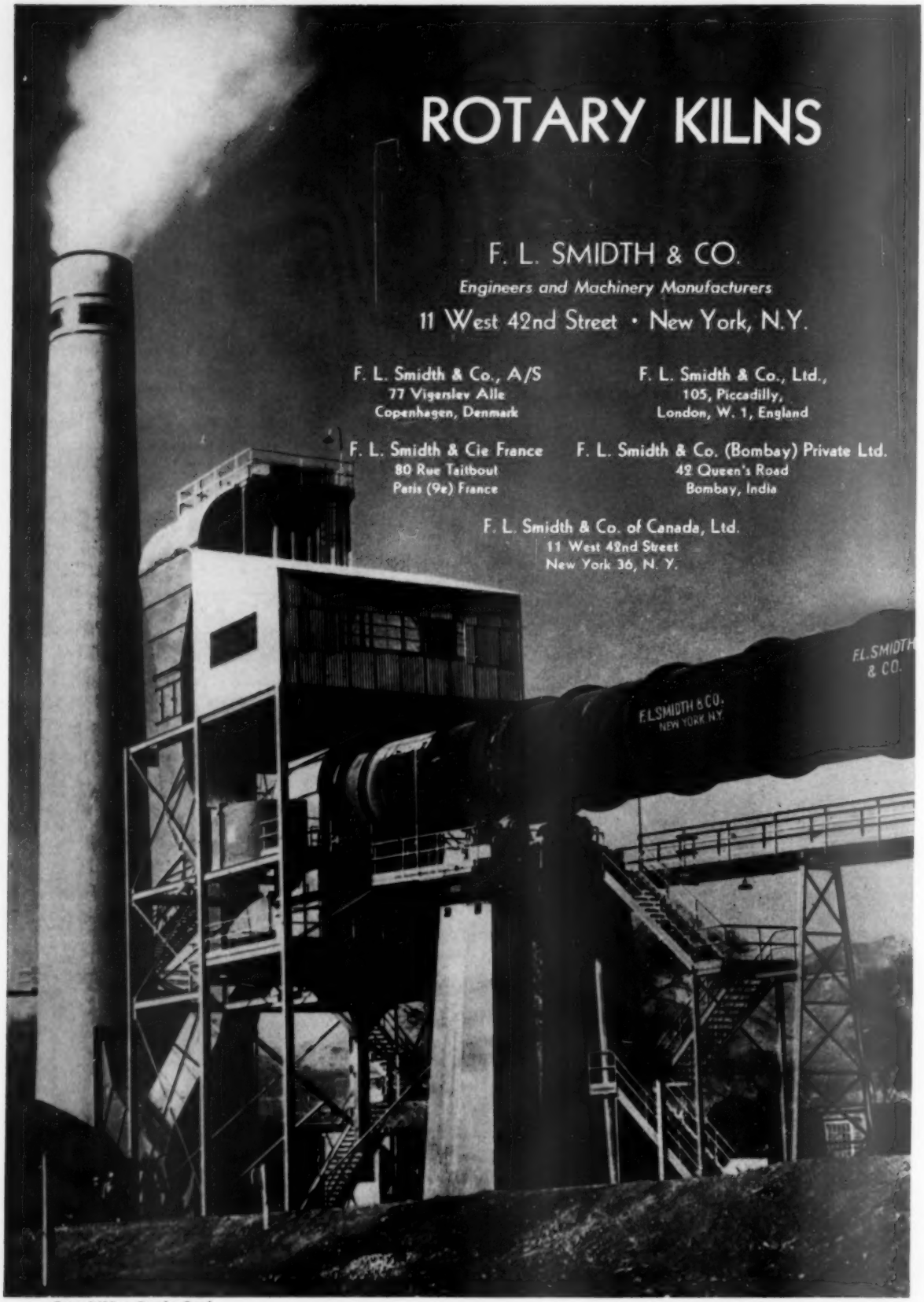
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What's Happening

IN OTHER FIELDS OF INTEREST TO THE ROCK PRODUCTS INDUSTRY

July, 1959

Biggest tire in the world may well be the 120 in. diam. three-ton tire made by Goodyear Tire and Rubber Co. The two-tone unit is the research model for a line of tires to be used on big new earth movers and other heavy construction machinery.

Nuclear-powered ice breakers and cargo-carrying submarines will be developed and built in Canada if the plans of government and industry mature. The Financial Post reports that the Canadians have authorized the designs of an icebreaker fleet to which atomic power plants can be added. The new ships will develop more than 20,000 hp. and will be designed especially for efficient operation in the bays and narrow channels of Canada's Arctic islands. The government has already received proposals for a nuclear-powered cargo submarine. The $54-million, 50,000-ton 600-ft. vessel could handle more than 28,000 tons of cargo at speeds up to 25 knots. Between the icebreakers and the cargo submarines an entirely new potential would be added to Canadian all-weather shipping capacity.

Business still can fail in spite of prosperity on all sides. Dun and Bradstreet reports that there was a downward trend in business failures in the first quarter of 1959. With 3,697 failures and liabilities of $197 million, this is a rate of 56 failures per 10,000 enterprises—a far cry from the 70 per 10,000 in 1939 and the record of 154 during 1932.

The old-time sugar kettle is back. But this time it is the basis for a new method of extracting sugar from cane. Instead of crushing the sugar cane in successive stands of heavy grinding machinery, the cane is simply shredded and passed through hot water. Nearly 99 percent of the available sugar is extracted, and a pilot plant in Hawaii reports other advantages to the diffusion process. After extracting sugar, the fibrous residue of cane is not forgotten. Hawaiian sugar planters and the Crown Zellerbach Corp. have been experimenting with making a tough, high grade paper from bagasse. If the paper-making test proves commercially feasible it will open up an entirely new source of revenue for sugar producers who now use the material only as fuel.

No more tire blowouts is the promise of a foam-filled automobile and truck tire now completing its testing. A conventional tubeless tire is simply filled with polyester-base urethane foam. Foam-filled tires apparently ride as comfortably as air-filled tires and seem to show greater stability and greater resistance to road shock. The manufacturer, The Dayton Rubber Co., expects that military requirements will prevent the new tires from becoming readily available for civilian use in the near future.

WHAT'S HAPPENING

Textiles of pure graphite can now be produced. A process developed by National Carbon Co. converts conventional fabrics to graphite cloth, a much needed material for both low and high temperature applications. With tensile strength as high as 15,000 psi. the new fabrics have great promise for use in electrostatic precipitators, bag filters and the carcasses of belt conveyors handling hot materials. The tensile strength of graphite textiles improves with increasing temperatures, yet they have sufficient strength to have great usefulness at sub-zero temperatures.

Long distance pipelines are still in the news. Latest idea is a proposal to pump a mixture of grain in petroleum from Canadian grain and oil-producing centers to the Great Lakes. Big obstacle to handling grain alone is the degredation of the individual kernels, and the promoters feel that oil or other petroleum products would overcome this difficulty. While the obstacles now seem insurmountable, a group of Edmonton businessmen are proceeding with full scale experiments.

Fused silica nose cones for missiles and rockets have been developed jointly by Georgia Tech and Glasrock Corp. of Atlanta. A new process for fusing, quenching and reforming silica shows promise for becoming an inexpensive way to form intricate parts with the strength to withstand extremes of temperature in space applications. Silica sand is fused to about 3,150 deg. F. and chilled. The fused mass is ground to powder, molded to the proper shape and fused again.

Sulfur will be shipped in tankers and crude oil will travel in collapsible nylon tanks. A converted Liberty ship will be the first vessel designed to handle liquid, molten sulfur. This 7,500-ton ocean-going ship will travel between Texas Gulf Sulphur's Beaumont, Texas refinery and its shipping terminal at Tampa, Florida. The sulfur will be kept liquid in steam-jacketed tanks. Oil or other petroleum products will be shipped in gigantic floating tanks. No full size "sausages" have been made, but large models have demonstrated the success of the idea. After the cargo is discharged, the rubber-coated nylon can either be filled with carbon dioxide or other non-flammable gas, or deflated and returned to the point of origin. First commercial use will be to raft petroleum products in the shallow rivers of West Africa.

Anthracite culm banks will be mined for industrial chemicals. These mountains of coal refuse in eastern Pennsylvania contain the raw materials from which ammonia, urea, acetylene and many other basic chemicals can be extracted. General Dynamics Corp. and Philadelphia & Reading Corp. have agreed to spend $100 million in a joint venture to exploit the unsightly, century-old accumulations of mine waste.

The editors

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Rear-Dump "Eucs" have payload capacities of 10 to 50 tons—are powered by engines of 128 to 670 total h.p. . . . have loaded speeds up to 41 mph.

Check Euclid Performance for Lower Hauling Costs

Leading contractors, mines, quarries and industrial users of heavy earthmoving equipment the world over have standardized on Euclids for tough off-highway hauls. They know from years of experience on their own operations that "Eucs" get more work done every shift — that production cost is lower than with other types and makes of equipment.

Euclid has a complete range of sizes and models to fit every job requirement — rear dump and bottom dump haulers, self-powered scrapers and the world's most powerful crawler tractor. Your Euclid dealer will be glad to provide a production-cost estimate on your present or planned operations — be sure to see him before you replace or add to your equipment fleet — and have him show you why Euclids are your best investment.

EUCLID Division of General Motors Corporation
Cleveland 17, Ohio

Bottom-Dumps carry payloads of 13, 17 and 25 cu. yds. struck . . . are powered by 218 to 335 h.p. engines . . . have top speeds up to 34 mph. Full length, unobstructed door openings make these "Eucs" ideal for dumping free-flowing material into drive-over hoppers.

The TC-12 Crawler has 2 engines and independent track-drive . . . 402 net h.p. . . . full power shift . . . top speed of 7.8 mph. This "Euc" tractor has unequalled work-ability for heavy dozing, ripping and similar work in construction, mining and logging.

This "Twin" Scraper has 2 engines with Torqmatic Drive . . . all wheel drive permits self-loading . . . struck capacity is 24 cu. yds. There are six other Euclid Scrapers, overhung engine and six wheel types, with struck capacities ranging from 7 to 24 yds.—9 to 32 yds. heaped.

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

TRACTOMOTIVE charts the

These charts are your guide for choosing a bucket and a loader that is just right for your job. You will operate at highest efficiency with the correct size bucket and the right size loader — get the highest possible production. No costly maintenance from overloading! And your loader will last longer, too. There's a whole family of buckets to choose from for each machine in the 5,300, 7,000 and 9,000-lb carry class.

How to use the charts

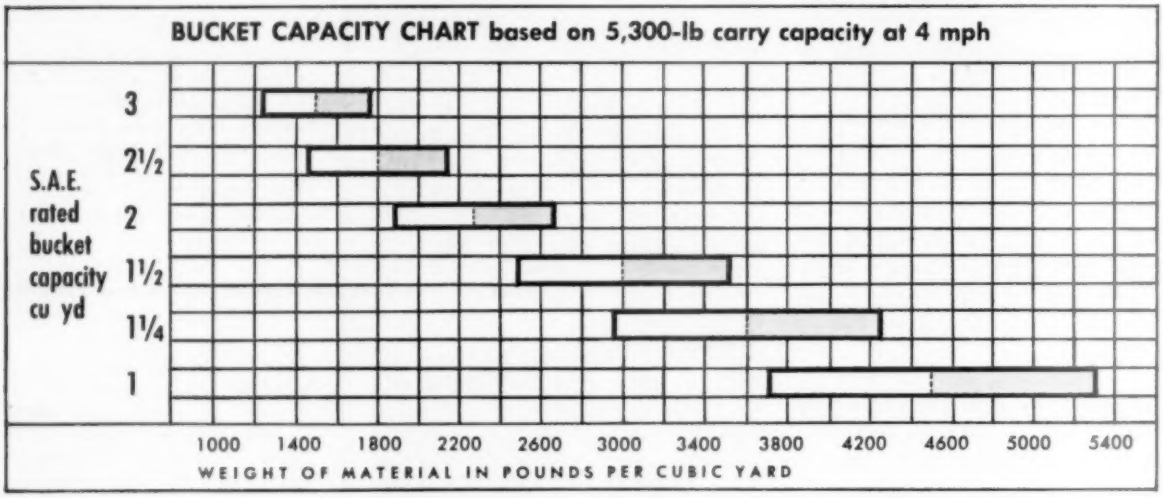
The bar opposite each bucket size shows the weight of materials per cu yd that you can handle with this size bucket. The area in color on the right side of the dotted line in the bar indicates the weight of materials that can be handled where loading is normal and operating conditions are good. The left side of the bar indicates the weight of materials that can be handled where conditions are adverse — such as steep grades, rough ground, or where you get excessive heaping.

Example: Suppose you are loading sand weighing 2,600 lb per cu yd. If your operating conditions are good and you get normal loads, you would choose the 3-yd bucket for the TL-20, the 2½-yd for the TL-16, or the 2-yd for the TL-14.

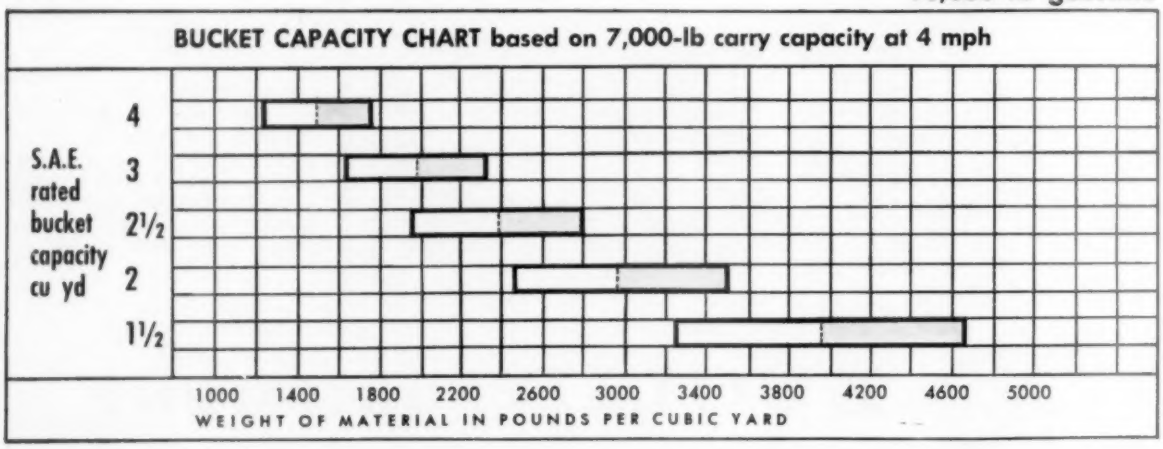
If your operating conditions are adverse or you get excessive heaping, you would choose the 2½-yd bucket for the TL-20, the 2-yd for the TL-16, or the 1½-yd for the TL-14.

Your Allis-Chalmers dealer will be glad to go over these charts with you . . . discuss your job requirements and help you select the most efficient size bucket and loader for your work.

TL-14 TRACTOLOADER 81.5 hp diesel • 86 hp gasoline • Weight: 14,480 lb

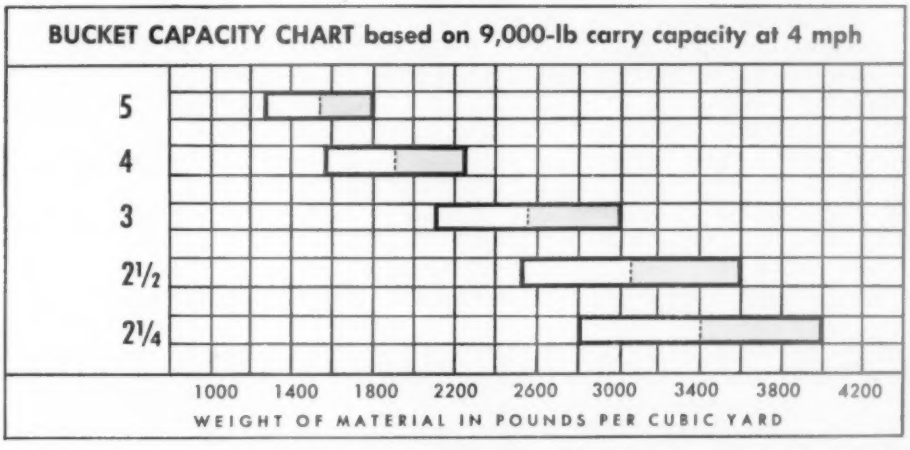

BUCKET CAPACITY CHART based on 5,300-lb carry capacity at 4 mph
S.A.E. rated bucket capacity cu yd
3
2½
2
1½
1¼
1
1000 1400 1800 2200 2600 3000 3400 3800 4200 4600 5000 5400
WEIGHT OF MATERIAL IN POUNDS PER CUBIC YARD

TL-16 TRACTOLOADER 104 hp diesel • 109 hp gasoline • Weight: 17,600 lb diesel 16,380 lb gasoline


BUCKET CAPACITY CHART based on 7,000-lb carry capacity at 4 mph
S.A.E. rated bucket capacity cu yd
4
3
2½
2
1½
1000 1400 1800 2200 2600 3000 3400 3800 4200 4600 5000
WEIGHT OF MATERIAL IN POUNDS PER CUBIC YARD

way to proper bucket selection

TL-20 TRACTOLOADER 130 hp diesel • Weight: 23,150 lb



To find out what a **TRACTOLOADER®** can do for you . . . ask your Allis-Chalmers dealer to show you **"And a Great Deal More."**

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TRACTOSHOVELS
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TRACTO — *a sure sign of modern design*

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EDITOR'S PAGE

George C. Lindsay, Editor

Where's your safety spirit?

NONMETALLIC MINE AND QUARRY OPERATORS DON'T PARTICIPATE as much as they should in the federal Bureau of Mines' National Safety Contest. Enrollment in 1958 was woefully low. This is a good and worthy contest. We think you're missing a good chance to champion safety in your company if you don't enter it.

The coal and metal mines groups have us beat in this competition. They showed an increasing spark of interest by doubling enrollment in 1958, in some cases. Are we to assume that, by comparison, interest in safety among rock products producers isn't what it should be? We sincerely hope not!

Maybe you haven't entered because you don't have the facts about this particular contest. The B of M sponsors it on an annual basis among mining groups of all types. Any mine or quarry in continental U. S. is eligible to enter.

Contestants are divided into six groups: (1) underground bituminous coal mines, (2) underground metal mines, (3) underground nonmetallic mines, (4) open-pit mines, (5) quarries, and (6) anthracite mines. Of course, rock products producers can compete in classes 3, 4 and 5.

An especially attractive "Sentinels of Safety" trophy and a green-and-white safety flag are awarded the winner in each class. The awards are made available by the Explosives Engineer magazine.

These prizes are coveted, and are valuable in many ways. They point up your own company's excellence in safety—tops in your field—as a starter. The trophy on exhibit and the pennant flying from its staff atop your plant are useful reminders to your employes, every day, to continue good safety practice.

They'll command the respect of your community they deserve, and will raise your company's standing in it. And the effort put forth to win them will reduce accidents, loss of life and human suffering.

We congratulate two rock products producers who took top honors in the 1958 contest. One is Grand Rapids mine, Bestwall Gypsum Co., Grand Rapids, Mich., in the underground nonmetallic mine class. The other is Thornton Quarry, Materials Service Corp., Thornton, Ill., in the quarry class.

We suggest you get details for the next available contest. Write today to Branch of Accident Analysis, Div. of Safety, Bureau of Mines, U. S. Department of the Interior, Washington 25, D.C.

Let's show our brothers in related mining fields we do have the proper safety spirit and desire to achieve the maximum in accident reduction.

JOB RECORDS PROVE

Firestones lower tire costs-per-hour!

Firestone off-the-highway tires cut costs by working extra hours on the roughest jobs! That's because they're built with Firestone Rubber-X, the longest wearing rubber ever used in Firestone tires. Tough Firestone treads and sidewalls defy cuts from rubble and shale. Exclusive Firestone S/F (Shock-Fortified) nylon bodies shrug off bruising shock and impact. There's a Firestone tread and tire design that is job-engineered for your job requirements. Call your Firestone Dealer or Store and ask about Firestone's full line of tubeless or tubed off-the-highway tires and on-the-job tire service.

Rock Grip Excavator Wide Base Rock Grip Excavator

When ordering new equipment always specify Firestone tires—available tubeless or tubed.

Firestone

BETTER RUBBER FROM START TO FINISH

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Completely New 6500-lb. capacity CASE® W-10 TERRALOAD'R®...

- 4-wheel-drive
- Rear-wheel full-power-steer
- 2 cu. yd. SAE rated
  (1¼ to 3½ cu. yd. optional)

WORLD-FAMOUS CASE DIESEL gives you better performance, greater economy

The W-10 was engineered to take *full advantage* of the tremendous power developed by the famous Case 401-cu. in. diesel engine... field-proven by over 12,000,000 hours of operation on all types of jobs in all climates, the world over.

★ **POWRCEL combustion** — gives greater fuel economy, cleaner burning, smoother running ... plus direct 24-volt electric starting.

★ **Six-point fuel filtration** — plus dry-type air filter which reduces dirt intake more than 90% over oil-bath cleaners.

★ **Extra-heavy, ribbed engine block** — gives more rigid engine, reduces flexing and results in less internal wear... increases usable HP and lengthens engine life.

★ **Heavy-duty 7 bearing crankshaft** — with 116 sq. in. of bearing surface... more than any other engine in its HP class.

★ **Pressurized cooling** — for uniform temperature. Controlled circulation lengthens valve life.

★ **Multiple cylinder heads** — prevent warping, make servicing easy.

★ **Diesel economy** — operates for pennies an hour, on a minimum of low-cost diesel fuel.

BRIEF SPECIFICATIONS

Carry capacity (4 MPH)	6,500 lbs.
Lift capacity (0 MPH)	13,000 lbs.
Max. HP	100
Forward speeds (3)	0 to 23 MPH
Reverse speeds (3)	0 to 23 MPH
Tires (std.)	16.00 x 24 — 12 ply
Overall height	7'3"
Width over hubs	94½"
Turning radius	20'
Weight (without tire fill)	18,120 lbs.

.....totally balanced for:

X GREATER WORK OUTPUT

Balanced power-to-weight ratio . . . exactly the right combination of engine power, traction and machine weight . . . insures top all-around efficiency . . . with minimum wheel slippage, maximum fuel economy.

X FASTER, SMOOTHER OPERATION

Balanced weight distribution, with 60% of empty weight on rear wheels, provides greater ground-gripping traction. No bucking or raising rear wheels off ground. This, combined with torque-converter drive and powerful breakout, gets heaping loads fast. New power-shift linkage gives more efficient control of operating speeds.

X LONGER LIFE

Case balanced construction results in less strain on engine and transmission, less wear on tires. All-welded channel subframe, heavy steel axles and cross-braced loader assembly provide maximum strength and rigidity.

X EASIER SERVICING

Brake, electrical and steering systems are all easily accessible by merely removing front cover plate. Multiple engine cylinder heads and removable wet-type sleeves permit servicing without pulling engine.

X SAFER HANDLING

Note that the W-10 loader arms are pivoted *ahead* of operator. This exclusive feature gives unequalled visibility, plus maximum operator safety. Better weight distribution, low center of gravity and wide-tread stability mean greater safety and permit moving bigger loads at higher speeds . . . less bouncing and tipping.

X LOWER COST

With all its advanced features, the W-10 is priced *lower* than its nearest competitor. That's because Case builds the entire machine. Unit construction also means one warranty, one service source . . . no split responsibility.

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J. I. CASE CO., RACINE, WIS.

See how the W-10 can cut your costs on jobs like these...
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TRANSPORTING AND STOCKPILING

CLEAN-UP AROUND SHOVEL

HEAVY LIFTING AND PLANT FEEDING

J. I. CASE CO., Dept. No. G1479, Racine, Wis.

☐ Send more information on new W-10 Terraload'r

Also send literature on

☐ 3000-lb. cap. W-5 Terraload'r ☐ 6000-lb. cap. W-9 Terraload'r

☐ Crawler tractor-shovels .... cu. yd. cap. ☐ Crawler dozers

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Company.....

Address.....

City..... Zone..... State.....

C-TL-333

ROCKY'S NOTES

NATHAN C. ROCKWOOD

Some Russian research on cement

THOSE IN-THE-KNOW appreciate that our Russian contemporaries are good in many kinds of chemical and physical research. We ourselves, of course, have been curious as to what they are accomplishing in the field of portland cement and lime. So, the Consultants Bureau, Inc., New York City, has supplied us with translations of a few samples of Russian research in Cements, Limes and Plasters.* In this sample are nine papers on cement and one on gypsum.

The titles of these papers are given as a clue to the kind of research reported. The authors' names here are omitted because it is doubtful if these would mean anything except to a dozen or so researchers in this country who might be familiar with their reputations and previous work. The papers or reports are: "Cementing Properties of γ - 2 CaO • SiO_2;" "Effect of Mineralogical Composition of Cement on its Contraction;" "Surface Strength of Cement Stone and Its Use as a Measure of Frost Resistance;" "Mixed Accelerators of Cement Hardening;" "Determination of Sulphur Trioxide in Portland Cement with the Aid of a Cation Exchange Resin;" "The Formation of Hydrated Calcium Chloro-aluminates and Their Effect on the Structure of Cement Pastes;" "International Congress on Winter Concreting;" "Gas Velocity Field in Shaft Lime Kilns;" "Investigation of the Effect of Strength Stabilization on the Properties of Cement and Concrete;" "A Crystallization Mechanism of the Hardening of Gypsum Cements."

The first thing you probably would notice is that the subjects all appear quite practical. However, some of the papers and reports available, but not included in this volume, are typically basic research in inorganic chemistry. The Russians seem to have given special attention to solid phase chemical reactions which are, of course, presumably the process of portland cement manufacture. These are included in 70 reports on Basic Science, the price of translations of all being $90. A list of the titles is apparently obtainable for the asking, and the price of the translation of any single paper is $7.50. From their titles some of these papers look as though they might prove very interesting.

To return to the samples submitted to us for review, the first paper covers a subject we have not found studied elsewhere—the cementing properties of (gamma) dicalcium silicate (γ - 2 CaO • SiO_2). All our recent textbooks inform us that γ - 2 CaO • SiO_2 has no hydraulic or cementing properties. It remained for the Russian researchers to doubt this long accepted statement, presumably unquestioned since the researches of W. Dyckerhoff in 1924. The Russian authors, P. O. Budnikov and R. D. Azelitskaya, state: "In all the latest literature sources devoted to hydraulic properties of γ Ca_2S, we were unable to find a basis for the conclusion that the γ-form of dicalcium silicate does not possess cementing properties."

They found by experiment that chemically pure γ C_2S hydrated the same as β C_2S and actually gave higher compressive strengths than β C_2S. But about a 50-50 mixture of γ and β C_2S had almost no compressive strength. Hence, they "concluded that pure γ C_2S has cementing properties, and that during slaking with water, there proceeds the same hydration process as occurs with β C_2S. The presence of certain impurities, particularly sesquioxides, in the raw materials used for the preparation of the γ C_2S has a negative effect on its strength." The iron oxides in the raw material were especially so effective.

As to the second paper on the "Effect of Mineral Composition of Cement on its Contraction" [in concrete], the authors Yu. M. Butt and E. M. Kolobov came to the conclusion that (1) "fusible minerals produce a considerably greater contraction

Please turn to page 110

**Part III*, Soviet Research in Glass and Ceramics, *1956. The Consultants Bureau, Inc., 227 West 17th St., New York 11, N.Y., is set up to supply English translations of Soviet research in all the sciences (except, presumably, those relating to weapons). The part we are reviewing here, Part III, is priced at $15.00. The complete section comprising 28 papers is priced at $35.00.*

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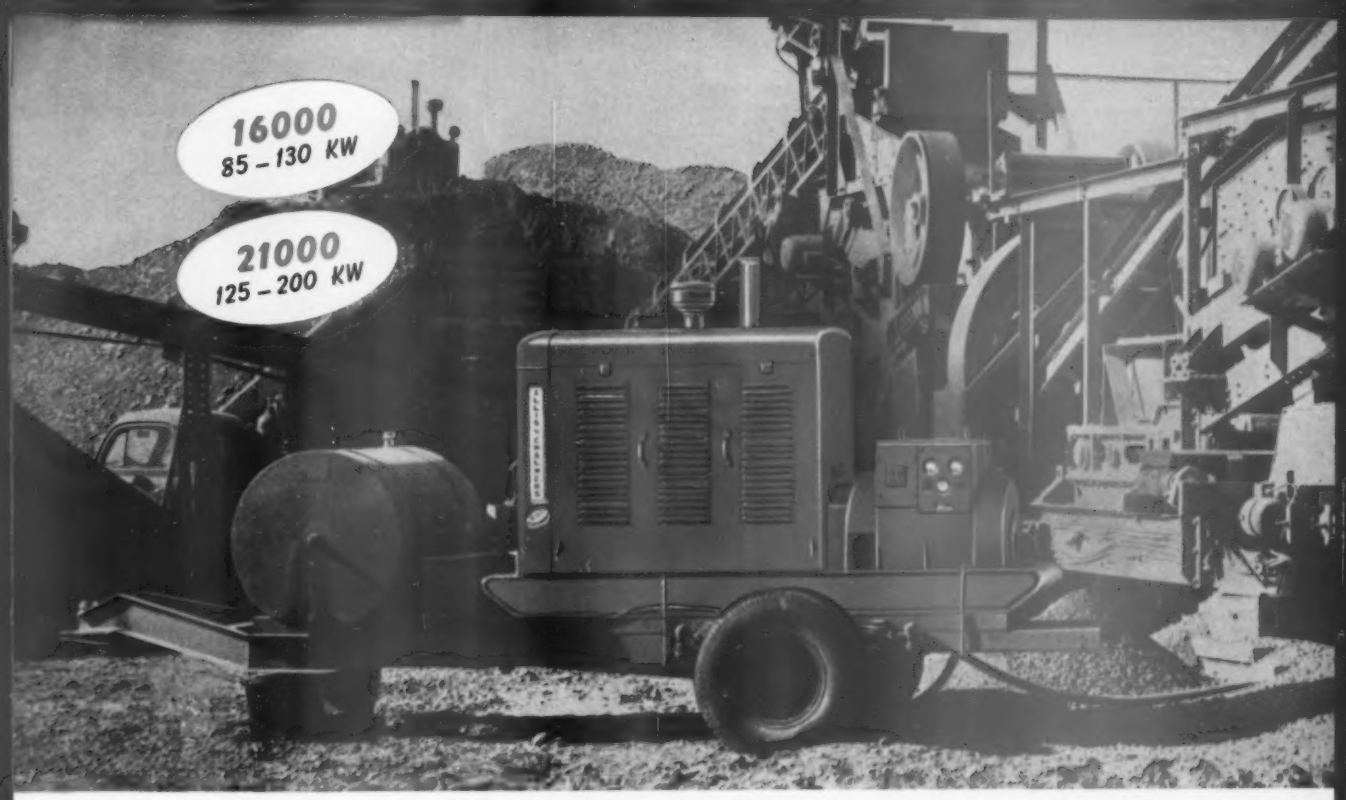


This Allis-Chalmers 16000 diesel generating set provides electric power for motors on a crusher operating near Great Falls, Mont. Primary power source for the crusher is an Allis-Chalmers 21000 turbocharged diesel power unit, companion to the 16000.

NEW A-C DIESEL GENERATING SETS WITH BRUSHLESS GENERATORS

. . . offer 5 big advantages

1. Single manufacturer responsibility

Allis-Chaimers manufactures and stands behind all four major components that comprise these *complete* units — the modern diesels, the proved brushless generators, the rapid-response regulators and the switchgear. This means coordinated engineering, matched performance, undivided responsibility — an Allis-Chalmers exclusive.

2. Fast starts — Fuel savings

The modern diesels, with their unique, controlled combustion, start and pick up loads in 4 to 10 seconds. They save fuel, too. The 21000, for instance, saves 8½ to 27% in fuel over other diesels in its class. That's 1 to 2½ gal. of fuel in every 10!

3. Precisely regulated power

The new Allis-Chalmers magnetic amplifier type static voltage regulator has no moving parts or contacts. No parts to burn or wear. It has unequaled fast response to sudden changes in load. Precise power regulation protects sensitive apparatus, easily picks up heavy motor starting loads.

4. Brushless generator has new simplicity

There are no slip rings, no brushes, no commutators to wear or to spark. Newly developed, non-aging silicon rectifiers rotate with the armature and replace the slip rings, brushes and commutator. Brushless generators are ideal for operation in dusty areas or in corrosive or explosive atmosphere — provide unequaled electrical reliability.

5. Fast, easy unit installation

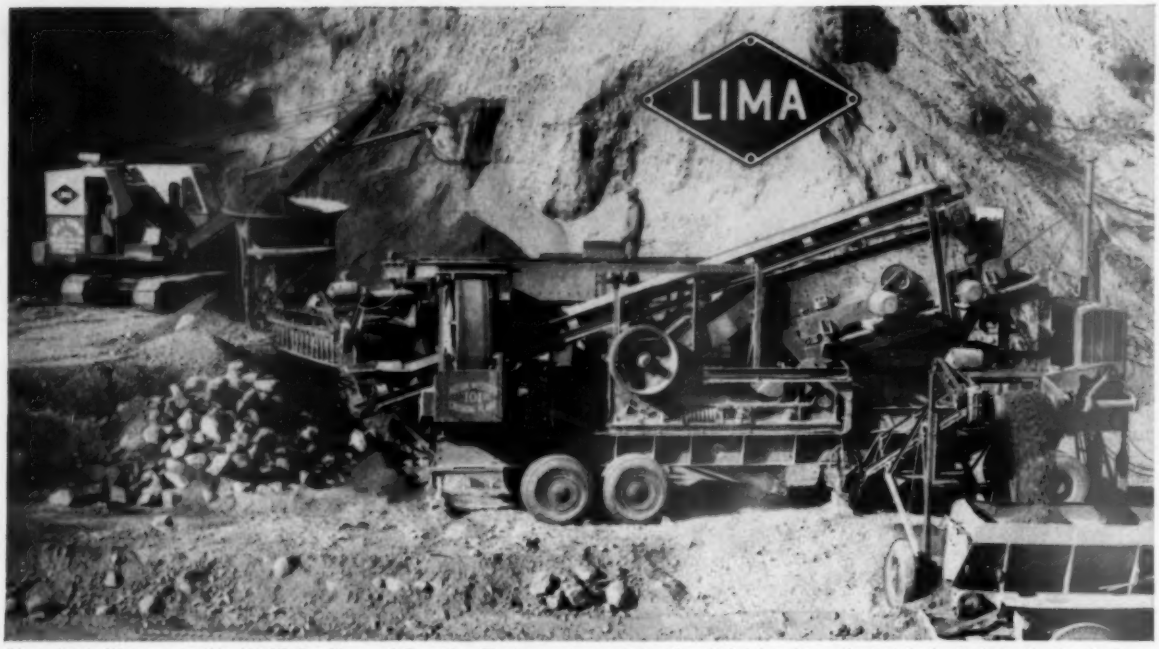
These sets are simple, unit-type, self-contained. They are mounted on husky skids — no special foundation is required, no danger of misalignment. Electrical connections are simplified, to speed installation and reduce related costs.

Your Allis-Chalmers dealer can give you complete specs, and assist in determining your needs. Call him or write Allis-Chalmers, Milwaukee 1, Wisconsin.

BG-36

ALLIS-CHALMERS

***POWER* FOR A GROWING WORLD**



Lima Austin-Western portable 101-SE Crushing and Screening Plant processes gravel and rock fed into its mechanical feeder in 1-cu.-yd. bites by Lima Type 44 Shovel. Accurately sized gravel travels conveyor direct to waiting State Highway truck at this Buchanan, Mich., site.

Crusher output averages 1000 cu. yd. daily— Lima Austin-Western 101-SE owner pleased

Roadbuilder John G. Yerington, of Benton Harbor, Mich., owns five Lima Austin-Western Crushing and Screening Plants. Of his portable 101-SE, shown above, Mr. Yerington says, "It is about 4 years old, but maintenance costs are extremely low. I'm well pleased with its ability to average over 1000 cu. yd. daily at a low cost per ton."

Superior performance

Thirty-one years ago, he bought his first Austin-Western equipment. Now he owns five Lima Austin-Western Crushing Plants and a Lima Type 44 Shovel. In addition, he has three graders, five rollers and a hydraulic crane—all Austin-Westerns. Obviously Mr. Yerington has learned from experience the superior capabilities of B-L-H equipment.

The rugged 101-SE is a completely portable, self-contained unit designed and built for rapid transport from job to job. High-speed production of construction materials at end-use sites reduces haulage time and costs. Diesel engine operates crushers and electric generator, which powers all other operations. Simplicity of transmission eliminates troublesome clutches, chains, sprockets and gearboxes . . . reduces maintenance, lowers tonnage costs. Only one man is required to operate the 101-SE by push button.

More tonnage for less

Lima Austin-Western Crushing and Screening Plants are engineered and quality built to produce a high volume of accurately sized gravel or rock over long years of trouble-free service. There is a portable or stationary Lima Austin-Western Crushing and Screening Plant exactly right for your needs. Learn how you can step up production and lower tonnage costs. See your nearest distributor or write us today!

Crawler-mounted Lima Type 44 Shovel empties its 1-cu.-yd. load into automatic feeder of Lima Austin-Western 101-SE Crushing and Screening Plant.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA AUSTIN-WESTERN Crushing, Screening and Washing Equipment

BALDWIN · LIMA · HAMILTON

CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO

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Washington Letter

Edgar Poe

Concrete Beams Properties of reinforced concrete beams have been undergoing a thorough investigation in the structural engineering laboratory at the National Bureau of Standards. The Bureau reported in its Technical News Bulletin that reinforced concrete beams can fail under loads by yielding of the reinforcement, compression of the concrete, failure of the bond between the concrete and the reinforcement and by shear.

The bulletin reported that shear failures result from excessive diagonal tensile stresses in the concrete induced by the combined effect of shear and bending movement. The results of the study show that a beam with no web reinforcements undergoes an abrupt change in its deformations and stresses following the formation of a diagonal tension crack. The American Iron and Steel Institute sponsored the investigation.

Exhaust Gas study The United States Public Health Service is receiving full cooperation from automobile and truck manufacturers in its current exhaust gas studies. The USPHS is inquiring into air pollution from various causes including exhaust gases which is causing more and more concern in the cities.

Meantime, both government and industry researchers are seeking to find out how to greatly curb the increasing problem. The automobile and oil industries are each putting up substantial outlays for research on air pollution. The Public Health Service spent $4,012,000 for inquiring into air pollution during the 1959 fiscal year, but Congress is providing an increase for the new fiscal year.

Among other things, test animals will be exposed to the gases and examined for changes in pulmonary conditions and body tissues.

Home boom Underway The home construction boom is moving steadily ahead, with the prospect of another increase around the corner. The new housing legislation is a contributing factor, of course. The rise in activity comes despite tighter credit controls and rising interest rates. Approximately one-third of the houses started this year were under government mortgage insurance programs.

New road Equipment The new highway construction equipment now in use and on the market is far superior to that of just a few years ago, said H. A. Radzikowski, chief of the division of development at the Bureau of Public Roads.

Ability of equipment manufacturers and contractors to increase machine production has offset to a marked degree the rise in other costs. Citing an example, he said it costs no more today to move a yard of dirt than it did 30 years ago, although other factors which contribute to earth-moving costs, including labor and materials, have climbed 300 percent the past three decades.

Court upholds State tax The Supreme Court of the United States has reaffirmed an important "interstate tax" case. The court declares that a corporation must pay state taxes in a state where orders are taken, although the firm maintains no office or place of business within the state.

A St. Louis firm appealed from an adverse decision issued by the Louisiana Supreme Court. The United States Supreme Court said the Louisiana tax levied was valid. The Missouri firm maintained that it had no office, storage or warehouse space in Louisiana, but it did have 15 salesmen in the Southern State soliciting business. Louisiana collected $4,554 in taxes for the business.

Labor Reform Measures

The fate of proposed labor reform legislation at this session is in doubt. Sen. John F. Kennedy, Democrat of Massachusetts, chief sponsor of the legislation, rightfully declares that unless the legislation is signed into law this year, there would be no chance to revive the bill in the 1960 presidential election year.

The measure evoked a bitter floor fight in the Senate before it passed with so-called "sweetner" amendments and was sent to the House over some objections of Senator John L. McClellan, Democrat of Arkansas. Senator McClellan's Senate Rackets Committee for two years exposed wholesale corruption in some labor unions, and the powerful Teamsters Union in particular. He thought the bill should be tougher.

The construction industry in particular would like to see a stronger bill passed. They favor a measure by Rep. Graham A. Barden, Democrat of North Carolina. His proposal, which bears no "sweetners", was dubbed on Capitol Hill as the "Workers Bill of Rights Act of 1959." Meantime, the Democratic leadership is somewhat on the spot if blackmail picketing and some other curbs are not approved at this session.

SBA funds Run low

The Small Business Administration is running low on lending money. Congress has before it a proposal to increase its lending authority by $200,000,000 above its present $900,000,000 maximum.

The proposed increase would not be a direct appropriation, but would authorize increasing the limit. The SBA has been in business five years, but it will be another three years before repayment loans start coming in fast enough to meet the demands for new loans.

Population Shoots up

It is obvious that the United States is going to need more and more new homes, schools, churches, streets, stores, sidewalks, parking lots and highways, among other things. The population is growing by one person every 11 seconds, by 330 every hour, 8,000 every day, and 225,000 every month. By the year 2000, only 41 years away, the present population will double to 350,000,000, the Bureau of the Census estimates.

No postal Increase

An increase in postal rates is out the window this year, and possibly next year when the big elections will take place. The Post Office Department is seeking a $550,000,000 increase, but there is marked opposition on Capitol Hill. Under the pending measure, first class letter postage would increase from four to five cents, and air mail from seven to eight cents. The increases would yield an estimated $355,000,000 a year.

Russia Leans to Big dams

Maj. Gen. E. C. Itschner, chief of Army Engineers, told Senate and House committees of some of Soviet Russia's engineering and construction achievements. He advised Congress that most Soviet water resource projects are multiple purpose. The hydroelectric function receives emphasis and priority.

He said Soviet demands for concrete and other building materials are great. They lean toward building very large earth and rock fill dams, using concrete only for critical portions such as locks, spillways and powerplants.

The Chief of Engineers said the fierce winters in Russia create considerable construction problems most of the year, but the Soviets have shown marked ingenuity in dealing with this handicap. In particular, they have employed advanced techniques for minimizing delays in the placing of concrete in cold weather.

Gasoline Tax out

An increase in the federal gasoline tax by a cent and a half to 4.5 cents a gallon seems out of the question at this time. The states need money, and some of them have already voted an increase in the gasoline tax. Taxes on the motorist are already exorbitant. This raises the question that is being asked by some retired persons: "What good are these new super highways, if you can't afford to buy gasoline for your car?" On the other hand, there are many qualified people who maintain that "our highways are 20 years behind the times."

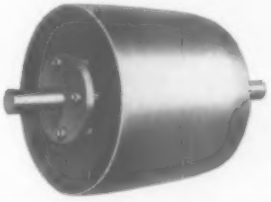
The primary and secondary road programs will be unaffected by the snafu as they have priority over the Interstate System. Even though new funds are not raised, the Interstate program will continue on schedule for at least another year.

STEPHENS-ADAMSON

BELT CONVEYOR SYSTEMS LOWER STONE & AGGREGATE HANDLING COSTS

A river of stone and aggregate is carried daily over the innumerable sand, gravel and rock handling and processing installations designed and built over the years by STEPHENS-ADAMSON engineers. Every operator's handling problem receives individual consideration and over 58 years of STEPHENS-ADAMSON engineering "know-how" provides a valuable source of ideas for meeting and solving the problems of each new installation. The final result is always the same . . . bulk materials are handled at the lowest cost per ton. Backing up the "know-how" and experience is a quality engineered line of components, each providing an exclusive combination of features—many of them carrying patents by S-A engineers. Put STEPHENS-ADAMSON engineering experience and manufacturing skill to work for you —write for full information today!

Stone rides uphill on a 19 degree slope from a gyratory crusher. The 36 inch wide belt, pictured, carries 650 tons per hour along a 439 foot run.



S-A CURVE-CROWN PULLEYS
—Maximum belt training effect with minimum belt stretch and wear are provided with exclusive S-A CURVE-CROWN design.

WRITE FOR BULLETINS 355 and 558

ENGINEERING DIVISION
STEPHENS-ADAMSON MFG. CO.
GENERAL OFFICE & MAIN PLANT, 7 RIDGEWAY AVENUE, AURORA, ILLINOIS

PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA • CLARKSDALE, MISSISSIPPI
BELLEVILLE, ONTARIO

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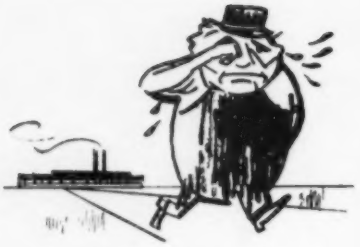
How would you decide?

A round-up of actual day-to-day in-plant problems and how they were handled by management men



If a machine breaks down, can you send a senior employe home or must you give him other work?

What Happened: Bill Bond was a ten-year man. When his machine broke down, he was sent home and recalled 2 days later when the repairs were completed.

Bill claimed that the company was wrong. "I'm a senior employe, and I was laid off while juniors were kept on. This is not what our seniority clause says. Seniority prevails in layoffs. I should get paid for those two days."

The company argued that this was no layoff in the traditional sense. It was an emergency, and seniority does not protect an employe in such emergency situations.

Was the company:
Right? ☐ **Wrong?** ☐

What Arbitrator Reid ruled: "It is obvious that were the company to use seniority in making layoffs when work is not available because of a machine breakdown, the task would be extremely burdensome, if not impossible, and would result in considerable loss of time due to the number of people it would be necessary to move.

"The common purpose of seniority layoff provisions is not to guarantee work, but to give protection between classes of employes on the assumption that some of them may be properly suspended for lack of work. Such provisions are generally construed as broadly applicable to temporary as well as permanent suspensions of work—that is, where there is no immediate prospective need of the services involved. There was no proof of the company action being other than in the utmost good faith. The grievance is denied."

If a supervisor is laid off, can he get back his job as a worker?

What Happened: Alec Pough was a foreman for 5 years. He was promoted to that job after serving 4 years as an employe in the same department. Upon a reorganization, his department was combined with another, and Pough was put on layoff status. He put in a bid for a job. The company agreed and let out an employe to make room for Pough. The company's reason for doing this was that Pough had 9 years seniority—4 as a worker and 5 as a supervisor. It based its claim on the following seniority policy:

"Computation of an employe's seniority will begin on the date the employe began work for the company, and no deductions will be made for the time lost due to any reasons."

The union put in a vigorous protest:

1. Once a worker is promoted to foreman he loses his seniority. The contract covers employes—not management.
2. If Pough is to be rehired, he should be put on as a new worker—at the bottom of the list.

The company argued:

1. Pough certainly had seniority when he was a production man. You can't take that away from him now.
2. Under our policy, seniority cannot be "lost for any reason," so that his promotion to foreman meant that his seniority continued to accumulate.

Was the company:
Right? ☐ **Wrong?** ☐

What Arbitrator Eckhardt ruled: "Under the company policy, once an employe is entitled to seniority, he computes the time from the date he began to work for the company without deducting time lost due to any reason. Clearly the language means that even though a foreman does not have seniority as a foreman, if he reaches a situation where he does have seniority, then the time spent as foreman will count toward the total seniority time.

"It is the award of the Arbitrator that the grievance be denied and, that under the terms of this agreement, employes who acquire seniority within the bargaining unit and who transfer to jobs as foremen outside that unit, and who later transfer back into the unit, have, as of the date of their return to the bargaining unit, seniority from the first date they began to work for the company." END

Each incident given in this department is taken from a true-life grievance which went to arbitration. Names of some principals involved have been changed for obvious reasons. Readers who want the source of any of these cases may write to *Rock Products*.

Sauerman DragScraper Digs and Hauls from Pit to Hopper for 8¢ Per Yard

Robert Wilson, Sr., president; Bob Wilson, Jr., treasurer; and Kent Wilson, vice president—Wilson Sand Co.

Track Cable DragScraper inhauling load to hopper from 40 ft. below water.

DragScraper and carrier returning to pit by gravity. Average haul is 500 ft. on a 675-ft. span.

Operating costs for Wilson Sand Co.'s new Sauerman DragScraper are estimated to be less than 8 cents per yd. This includes labor, maintenance and power costs to dig from 40 ft. below water level and deliver 90 yds. per hr. to the field hopper on an average haul of 500 ft.

Wilson Sand Co.'s new 125-tph. plant represents a steady increase in capacity which started with 20 tph. in 1939, using a small Sauerman Slackline.

Sauerman equipment has kept pace with the growth of their Upper Sandusky, Ohio plant. The Slackline was replaced by a 1½-yd. track cable DragScraper in 1951, and with a 2-yd. machine in 1953. The new Sauerman unit is a 3-yd. track cable DragScraper operated by a two-drum electric hoist equipped with air controls.

The DragScraper is digging 35 to 45 ft. under water down to bed rock on a 675-ft. span. The pit bank stands 40 ft. above the water, thus total depth of the deposit recovered by the DragScraper is about 85 ft.

Excellent material and the right equipment to dig and process are responsible for the continued growth of the Wilson Sand Co. Officers of the company are Robert W. Wilson, Sr., President, Kent Wilson, Vice President and Bob Wilson, Jr., Treasurer.

You can cut *your* costs by digging and hauling with a Sauerman Machine sized to match your plant capacity. Track cable Drag-Scrapers dig from high banks, dry pits and deep water. They are built in sizes up to 15 yds. and operate economically on 1000-ft. spans. Start reducing your operating costs—write or call and tell us your job requirements.

After discharging load into field hopper, DragScraper is lifted from pile for return to pit. Conveyor at left leads to plant.

This Sauerman two-drum hoist controls operation of DragScraper.

SAUERMAN BROS., INC. 630 SO. 28th AVE. BELLWOOD, ILL.

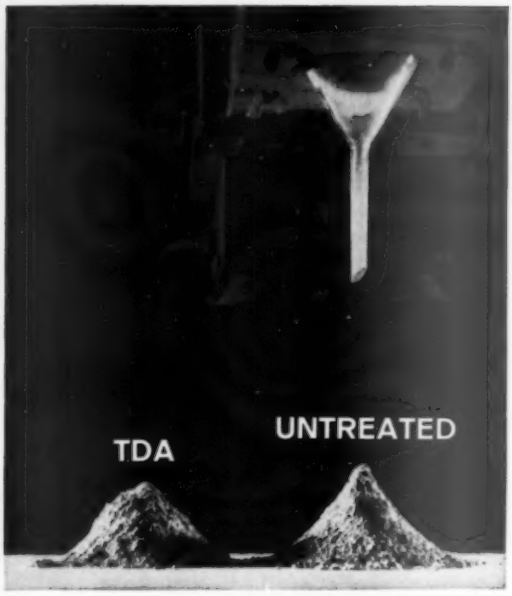
Linden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent DragScrapers • Slackline and Tautline Cableways • Durolite Blocks

Enter 1434 on Reader Card

How to save up to $84

unloading a car of cement



Laboratory test demonstrates dry-dispersion characteristics of TDA-treated cement. Here, cement samples poured from mechanically-vibrated funnels under closely controlled laboratory conditions are graded by their resulting slope, or "angle of repose." The lower slope of TDA-treated cement signifies greater dispersion, lower resistance to flow.

Two able-bodied men should be able to unload a hopper-car of cement in an hour or two. But if the load has become compacted or pack-set en route, the same job may take two days . . . 32 man hours, at $3 per hour!

There's a practical way to beat the problem. The answer is Dewey and Almy's TDA, a cement dispersant which makes cement flow easily and smoothly. In fact, tests show that TDA cement is 6 times easier to start flowing than untreated cement.

TDA is also a *grinding aid* which can increase mill output 10-50%, depending on conditions. When you consider this combination of benefits, doesn't it make sense to evaluate the use of TDA in *your* cement?

W. R. GRACE & CO.
DEWEY AND ALMY CHEMICAL DIVISION
Cambridge 40, Mass.

Dewey and Almy Chemical Division, W. R. Grace & Co.
621 Whittemore Avenue; Cambridge 40, Massachusetts
Attention: Rock Products Chemicals Department

☐ Please forward the new TDA "Pack-Set" Bulletin

☐ Please make arrangements for your engineer to assist in a full-scale test grind at our plant.

NAME .....

TITLE .....

COMPANY .....

ADDRESS .....

CITY ..... STATE .....

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PEOPLE IN THE NEWS

P. H. Townsend

H. R. Schemm

E. W. Denby

C. M. Adams

New officers selected at Huron Portland

A REORGANIZATION in management personnel was announced recently by Huron Portland Cement Co., following the firm's acquisition by National Gypsum Co. The cement firm will be operated as an independent subsidiary by the following management team:

Paul H. Townsend continues as president and chief executive officer. He will also serve as Huron's board chairman. Mr. Townsend has been named a director of parent National Gypsum, that firm announced.

H. Ripley Schemm has been named executive vice president. He had been vice president in charge of operations. Clarence L. Laude continues as vice president for sales. Earl W. Denby is new secretary and treasurer, and Charles M. Adams is new vice president for operations. The new board consists of Mr. Townsend, plus Mr. Schemm, Mr. Laude, Mr. Denby and William M. North, who is vice president in charge of expansion of National Gypsum.

Resignations were accepted from Emory M. Ford, chairman; John B. Ford, Jr., director and vice president; Frederick S. Ford, director; William W. Crapo, director, secretary and assistant treasurer, and John B. Ford, III, treasurer.

A graduate of Yale University, Mr. Townsend joined the firm as assistant to president Stanford T. Crapo. He rose through the operations department to vice president, with general supervision of manufacturing, sales and accounting, by 1942. He was named to the board in 1944, and president in 1953.

Mr. Schemm joined the firm in 1925, as assistant to Mr. Townsend, who was then in charge of the firm's distributing plants and vessels. Mr. Schemm later was named assistant general manager, and became vice president for operations in 1949.

Mr. Denby, youngest member of the management group, joined the firm in 1946 as assistant to Mr. Adams, then superintendent of vessels and plants. In 1950 Mr. Denby became administrative assistant to vice president and general manager Townsend, and was promoted to controller in 1953.

Upon graduating from college in 1941, Mr. Adams joined Huron as assistant of plants. Two years later he enlisted in the Naval Reserve; upon returning in 1945, he became superintendent of vessels and plants. He was named manager of distribution in 1954, and assistant manager of operations in 1956.

Russell named president of American Cement

WALTER C. RUSSELL has been elected president of American Cement Corp., a post vacated since March 9 when D. S. MacBride died. Mr. Russell is also vice chairman of the board and chairman of the executive committee. He was president of Peerless Cement Corp., Detroit, prior to its merger on December 31, 1957, with Riverside Cement Co. and Hercules Cement Corp. to form American. He has been chief executive officer of Peerless since 1933.

W. J. Grove heads Grove Lime Co.

W. JARBOE GROVE has been named president of the M. J. Grove Lime Co., Frederick, Md., succeeding Robert B. Crothers, who has retired. Mr. Grove had been executive vice president of the firm since 1955. Mr. Crothers continues as a director.

A graduate engineer from Cornell University, Mr. Grove held positions as a teacher at Cornell, assistant city engineer of Frederick and was a consulting engineer before joining the lime firm founded by his grandfather. He joined the company in 1938 as head of the road and bridge construction division.

Horner heads Kosmos; Redmond on Flintkote board

R. B. Horner

N. J. Redmond

FLINTKOTE CO. ANNOUNCED two important appointments in two of its rock industry subsidiaries. Robert B. Horner has been named president of Kosmos Portland Cement Co., Louisville, Ky. He succeeds Charles Horner, who becomes vice chairman of the Kosmos board. Robert Horner had been vice president for operations. A son of the former president, Robert Horner is a graduate of Princeton University. He joined Kosmos in 1946 as assistant engineer, later was assistant plant manager and plant manager.

In another move, Flintkote announced that president Noel J. Redmond of Blue Diamond Corp., West Coast gypsum producer, was elected to the Flintkote board. Blue Diamond had just been acquired by Flintkote.

(Continued on page 28)

PEOPLE IN THE NEWS

(Continued from page 27)

M. J. Ankeny

E. P. Shoub

I. Hartmann

Ankeny, Shoub, Hartmann of Mines bureau honored

DIRECTOR MARLING J. ANKENY, Region V director Earle P. Shoub and the late Dr. Irving Hartmann, former chief of the Branch of Dust Explosions, all of the U. S. Bureau of Mines, have received the highest award given by the Department of the Interior for outstanding service.

Interior's Distinguished Service Award and gold medal were bestowed upon Mr. Ankeny for his notable contributions to mine safety during 26 years of government service, in which he rose from first-aid miner to chief of the Federal bureau. He was cited for his leading role in building the bureau's mine safety program, formulating Federal mine-safety codes in the coal industry, and his "exceptional skill in maintaining the confidence and support of both management and labor" in administering Federal coal-mine safety laws.

Mr. Shoub was honored both for his technical skills and administrative ability. He developed a process for making high-quality sponge iron in rotary kilns, and introduced the successful use of an iron-oxide catalyst for speeding the gasification process used in converting coal to oil. With Mines since 1943, Mr. Shoub was named an administrator in 1950, and Region V director in 1956.

Dr. Hartmann died last February after 30 "eminently productive" years as an internationally known bureau authority on explosives and explosions. His studies in the Bureau's experimental coal mine at Bruceton, Pa., led to improvements in the Federal coal-mine inspection program and in the bureau's health and safety educational activities.

Perlite Institute names Narramore managing director

MARVE NARRAMORE, former assistant secretary-treasurer of the Valve Manufacturers Association, is new managing director of the Perlite Institute. He has 12 years experience in trade association management and training. Mr. Narramore studied at Milliken University and graduated from the National Institute for Organizational Management. He replaces Richard J. O'Heir, who resigned as secretary-treasurer of the group to accept a position with The Arundel Corp., Baltimore, Md., aggregates and concrete producers.

Metzger named production vp. at Calaveras Cement

GRANT W. METZGER, manager of the firm's San Andreas, Calif., plant since 1953, has been named vice president for production of Calaveras Cement Co. He succeeds E. M. Barker, deceased.

He joined the firm in 1951 as assistant to the plant manager. A retired Colonel in the U. S. Marine Corps, Mr. Metzger also worked with several western mining firms and as a mining consultant. He is succeeded as San Andreas plant manager by Orrin E. Weeks. Mr. Weeks joined the firm in 1951, and has been engineer, assistant quarry superintendent, mechanical superintendent and technical assistant to the plant manager.

Stitt named sales chief at Southwestern Portland

ELMER R. STITT is new sales manager of Southwestern Portland Cement Co., reports Eastern division manager Ernest V. Apt. The firm has plants in California, Texas and Ohio.

Dundee, Ideal cement firms name plant chiefs

NEW PLANT MANAGERS have been named for the Mobile, Ala.; Superior, Nebr., and new Tijeras, N. M., plants of Ideal Cement Co., and the new Dundee, Mich., plant of Dundee Cement Co.

Ideal reports that Robert E. Marsh, formerly plant manager at Superior, has been named manager of the firm's bigger Mobile plant. He is replaced at Superior by Rob Roy Cerney, formerly assistant manager of the firm's Portland, Colo., plant. Mr. Marsh replaces Hugh L. Conner, who resigned. Robert H. Biggs is manager of the firm's new Tijeras plant, which was scheduled to open in May or June. He has served as Ideal's construction superintendent at Tijeras.

Dundee Cement announced the appointment of Werner Ostberg as manager of the firm's Dundee plant, set to begin production in October (completion of the plant is expected by year end). Before joining Dundee last year, Mr. Ostberg was plant manager of the Alexandria Portland Cement Co. in Egypt. Previous to that he was a project and field engineer for F. L. Smidth & Co., working on projects around the world. He was born and educated in Denmark.

Holden heads Toronto sand and gravel firm

JOHN N. D. HOLDEN has been named president and general manager of Holden Sand & Gravel Ltd., Toronto. Since 1954 Mr. Holden had the dual role of manager of the Marine Division of McNamara Construction Co. Ltd. and president of the Holden firm. He now will assume full-time duties as chief of the sand and gravel firm.

Gypsum Association names Malcolm Meyer president

MALCOLM MEYER, executive vice president and director, Bestwall Gypsum Co., has been elected president of the Gypsum Association. He succeeds John W. Brown, senior vice president of National Gypsum Co., in a two year term as president. Other officers elected are: R. R. Galloway, first vice president; Donald G. Slawson, second vice president; and Carlton M. Rogers, treasurer. A graduate of the University of California, Mr. Meyer began his career in gypsum with Certain-teed Products Corp. in 1937. **END**

Enter 1404 on Reader Card

engine power BY CATERPILLAR

How Cat Diesel power pays off in industrial and mine locomotives

Today, not all industrial and mine locomotives have Caterpillar Diesel power. But the trend is definitely in that direction in locomotives up to and including 70-ton capacity. A locomotive assignment is no "bed of roses" for a diesel. That is why owners insist on the excellent productivity offered by Caterpillar. In both new locomotive purchases and in locomotive repowering jobs, men who demand more work from their diesels specify Caterpillar Diesel Engines.

If locomotives are a part of your production picture, these benefits of Cat power should be considered:

POWER RESERVE. Cat Engines deliver power needed to overcome adverse grades and bends. Their high torque rise and reasonable ratings will take heavy loads where "paper" horsepower is left behind.

WIDE RANGE OF FUELS. Cat Engines burn many fuels other diesels do not use. This non-premium appetite pays off in several ways: you can burn lower priced fuel . . . and you can burn heavier fuel (per gallon) with more resultant horsepower output.

FUEL BURNS COMPLETELY. The nonsensitive, foul-free Caterpillar-built fuel injection system gives complete fuel burning because of its precombustion chamber design. It transforms more of your fuel dollar to work and gives a clean exhaust that does not cloud up tunnels or foul up air underground. A variety of scrubbers, available for Cat Diesels, makes many of these engine arrangements permissible for use underground.

GOOD BREAKAWAY POWER. A Caterpillar Diesel-Torque Converter or Diesel Electric Drive enables a locomotive to break away large loads without an assist. This feature eliminates the high clutch costs on a direct drive installation. Most owners who have converted to these methods comment favorably on their advantages.

NEARBY PARTS AND SERVICE. Caterpillar Dealer Service facilities are available in all countries of the Free World—over 840 outlets place your Cat Diesel always near a parts and service source. This is why most manufacturers will offer Cat power when nearby parts and service are important factors.

HEAVY-DUTY DESIGN. The Cat Diesels that are offered for locomotive power are the same basic engines that have long been standards in the tough construction and mining industries.

Caterpillar Tractor Co., Peoria, Ill., U. S. A.

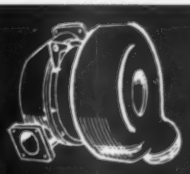
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Caterpillar Dealers have cooperated closely with many large construction, mining and industrial companies on the solution to locomotive repowering problems. Your dealer will be glad to analyze your conditions and offer a repowering solution. For new equipment, contact your locomotive branch office or mail the coupon below.

Your Caterpillar Dealer Engine Specialist is your diesel power consultant. He's backed by quality parts, reasonably priced, and a skilled staff of factory-trained servicemen. Call him now to avoid problems later.

TURBOCHARGER — standard on most Cat Engines—gives more horsepower per pound of engine weight . . . improves efficiency by utilizing waste energy which reduces fuel consumption per horsepower-hour.

CDES



Dept. RP5, Engine Division
Caterpillar Tractor Co., Peoria, Illinois

Please have your representative get in touch with me and survey my locomotive power requirements. I am interested in diesel power for ☐ a new locomotive ☐ repowering an old locomotive. (If repowering, specify size of locomotive:_____)

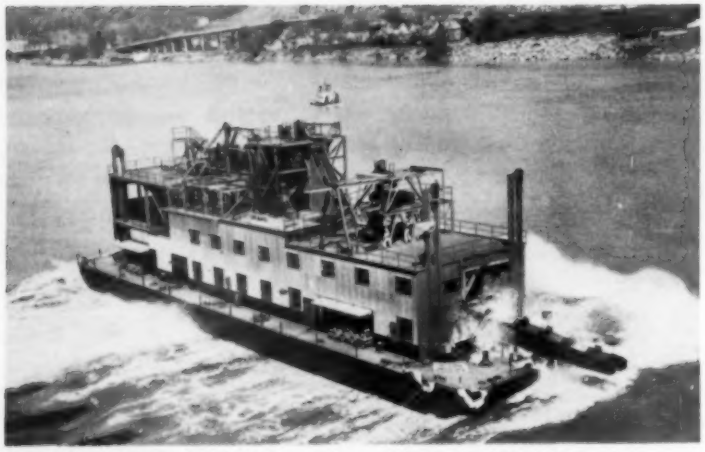
Name_____

Company_____

Address_____

City_____ Zone____ State_____

INDUSTRY NEWS



Dravo's new 500-tph. dredge hits water at firm's Neville Island shipyard

Dravo launches 500-tph. Ohio River dredge

THE KEYSTONE DIVISION of Dravo Corp. launched a 201-ft., $2 million dredge on April 29, as a replacement for the older of two barges the division presently has working the Ohio River below Montgomery Dam. Keystone is one of Western Pennsylvania's largest suppliers of sand, gravel and ready-mixed concrete.

The 500-tph. dredge has a 100-ft. bucket ladder, and is equipped with heavy media plant, impact crusher and scrubber. It can produce four grades of aggregate—sand and three grades of gravel. And four barges can be loaded at once from the dredge.

The dredge it replaces had no media plant, so couldn't work some river-bottom deposits because of their coal, sticks and other undesirable objects. And larger sizes of gravel, wasted by the older dredge, will be crushed to the desired size by the new unit. The new dredge, No. 16, pairs with a 375-tph. unit also equipped with media plant.

Ideal makes depletion news by suing United States

IDEAL CEMENT CO. IS SUING the U. S. government for nearly $8.6 million, because the company believes it overpayed Federal taxes by taking a smaller depletion allowance than it might have. From 1951 through 1954, the company says it took only a 10 percent annual depletion rate on its limestone mined, when it was entitled to 15 percent. The company mined nearly $40 million worth of this cement-making material in those years, it reports. Recent court decisions have brought a flood of claims for tax refunds from cement producers. The decisions said that mineral extractors may take depletion allowances on all income from manufacturing or other non-mining operations directly connected with their mining operations.

Internal Revenue Department men want Congress to pass a law limiting the revenue losses, which IR figures may reach $300 million. *Business Week* magazine reports that 90 cases, totaling $111 million in claims, come from cement producers. Tax officials fear the government will lose $50 million a year, because of the court rulings, in the cement industry alone.

Construction volume up 13 percent through April

DOLLAR VOLUME OF CONSTRUCTION was up 15 percent in April, from the 1958 month, and 13 percent for the first four months of this year, over the 1958 period, the Departments of Commerce and Labor report.

Leading the gains were two important segments of the construction picture—housing and highways. Housing, for the four months, was up a whopping 29 percent over 1958. Housing starts for April set a record 1,390,000 at the seasonally adjusted annual rate. This strength was both in conventionally and government-financed homes, the Department of Labor reports. Prospects for a continuing boom depend on Congress passing a new housing bill, now before that body, which would give the Federal Housing Administration $10 billion more in mortgage insurance authority. Homebuilding probably will not continue to break records during the rest of the year, *The Wall Street Journal* believes, since home buying is beginning to slacken as recession-deferred home purchasing ends. But the FHA expects that nonfarm housing starts will reach 1,285,000 this year, up from the 1.2 million pace of last year.

The highway picture is also bright. Dollar volume was up 25 percent from last year, for the first four months, the Departments of Commerce and Labor report. The Portland Cement Association reports that contracts awarded for concrete pavement were up 4 percent for the four months, to 32.1 million sq. yd.

U. S. Gypsum plans to get American Rock Wool Corp.

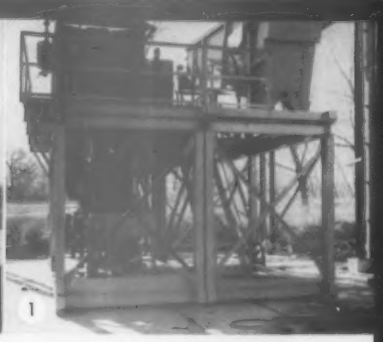
IF STOCKHOLDERS APPROVE, American Rock Wool Corp. will be taken over by U. S. Gypsum Co. July 1. The seven-plant producer of mineral wool, glass fiber and products had 1958 sales of about $13 million. USG's 1958 sales reached $266 million.

(Continued on page 33)

Enter 1465 on Reader Card

8:30 A.M. Truck convoy has arrived at plant site. Five local steelworkers, using two 10-ton cranes, place densifier support section on load bearing piers prepared by customer. Operation completed in 20 minutes.

Eagle HMS plant is then disassembled in four sections and shipped in truck convoy (or by rail). Weight of each of the four sections is well within highway load limitations.



Factory pre-assembled. Exact fitting of all structural members assured. All motors properly phased, all electrical controls, wiring, piping operated to assure proper functioning.

10:30 A.M. Pumping and Media Salvage Section in place and connection to the first section. This same "four block section" construction is available in 25, 50, 100 and 150—tons per hour capacity plants.

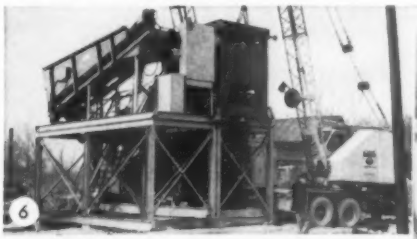
12:00 NOON. Densifier and Control Section has joined the plant and the day is still young. (One hour out for lunch).

ROME

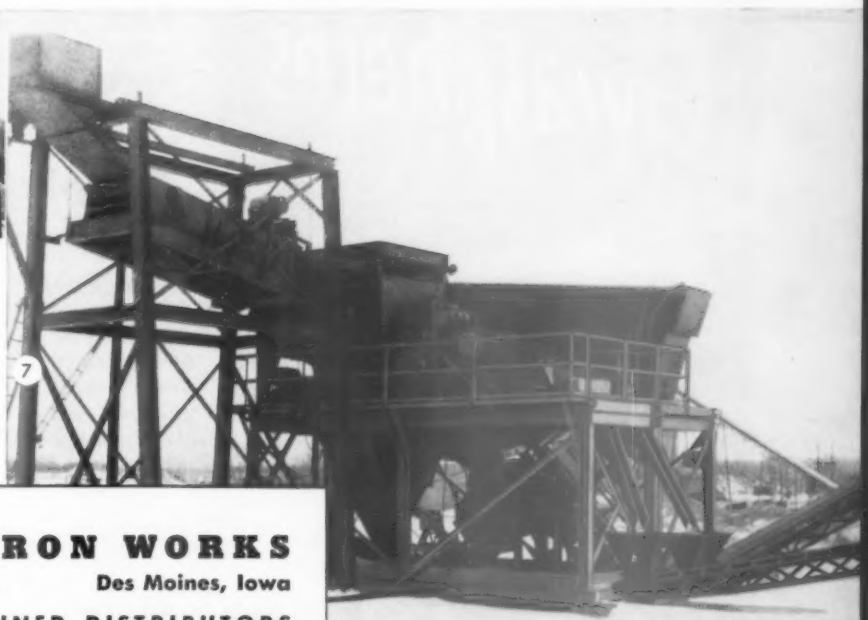
WASN'T BUILT IN A DAY

but look what Eagle did in one day!

THOUGH intricate and massive, an Eagle Heavy Media Separation Plant, such as shown here, can easily be erected in one day. Eagle Aggregate Washing and Classifying Equipment is specifically designed to facilitate erection at the pit or quarry site, resulting in further savings for the owner.



2:30 P.M. Separation and Rinsing Section, including the highly efficient O.C.C. Separatory Vessel, fills the last gap. 40-man hours have set up the complete plant. Two additional man hours to connect media recovery circuits, hydraulic couplings and electrical plugs.



Completed Eagle HMS plant with auxiliary prewetting screen and the feed and stockpiling conveyors in place. Aggregate producers with separation problems that cannot be solved by the usual methods will find the Eagle HMS plant an efficient, economical answer to the problem. Send for Catalog 58.

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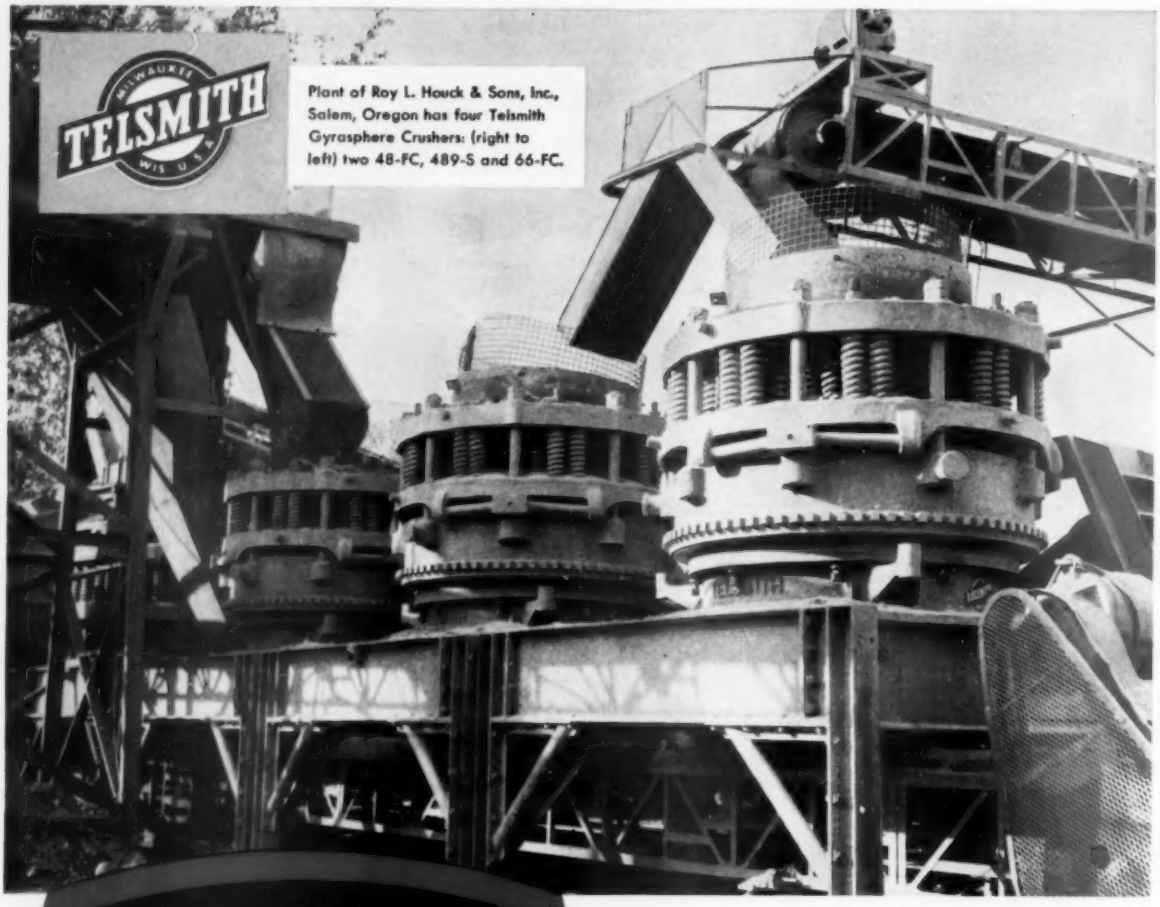

Plant of Roy L. Houck & Sons, Inc., Salem, Oregon has four Telsmith Gyrasphere Crushers: (right to left) two 48-FC, 489-S and 66-FC.

TELSMITH Gyraspheres

far superior— in 3 ways

1. Lower Power Needs
2. Better Particle Shape
3. Higher Capacity

Y-17 159

The Roy L. Houck & Sons, Inc., of Salem, Oregon plant near Albany, Oregon is pictured here set up to make concrete aggregate. With its four Telsmith Gyrasphere Crushers this plant can produce minus 2½", and minus 1½" base material, and minus 1¼" road ballast; and also ¾" crushed asphalt material. Total plant capacity is 485 to 525 cu. yds. per hour. The plant has a Telsmith 42" x 33' Portable Apron Feeder and a Telsmith 4' x 10' Heavy-Duty Scalping Screen. The two 48-FC, the 489-S, and the 66-FC Telsmith Gyraspheres have again proved their 3-*way-superiority* as reduction crushers—with (1) lower power needs, (2) better particle shape, (3) higher capacity. Send for descriptive Bulletin 274.

SMITH ENGINEERING WORKS

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INDUSTRY NEWS

(Continued from page 30)

Aggregates producers report good first quarter

AN IMPROVED FIRST QUARTER over 1958 was the story with aggregates firms in early 1959. The net-income figures for three:

	After-tax net, 1st quarter, thousands	Percent change from 1st Qtr., 1958
Vulcan Materials Co.	$202	up 30
Minerals & Chemicals Corp.	532	up 260
Warner Co., Philadelphia	253	($237 loss)

American-Marietta gets Superior Stone Co.

AMERICAN-MARIETTA Co. has acquired Superior Stone Co., Raleigh, N.C., big stone and gravel producer. The firm has 20 plants in North Carolina, South Carolina, Virginia and Georgia. It produced about nine million tons of aggregates last year, and has 800 million tons of reserves.

President W. Trent Ragland, Jr., of Superior continues to head the firm, and is slated to become an American-Marietta director, board chairman Grover M. Hermann reports.

American-Marietta last year acquired the Carolina Concrete Pipe Co., with plants in Charlotte and Lilesville, N.C. Other recent acquisitions in the Eastern states include three cement firms: Southern Cement Co., Birmingham, Ala.; Standard Lime & Cement Co., Baltimore, Md., and Dragon Cement Co., with plants in Pennsylvania and Maine.

Crossed wires

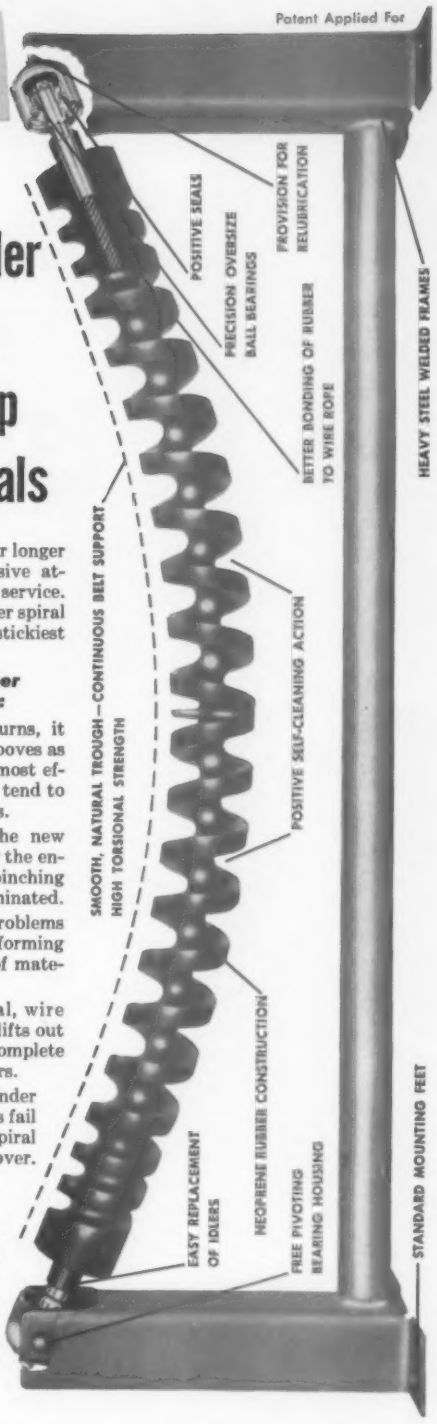
WE GOT A COUPLE OF WIRES crossed in the Equipment Reference to the Glen Canyon story, beginning on page 134 of the May, 1959, issue. Proper credit was given to Southwestern Engineering Company for the engineering and supply of one of the Heavy Media System plants used on that job. But, alas, the credit line was inserted at the wrong place. We want you to know that Southwestern engineered and supplied the HMS plant for the gravel section, equipment for which was manufactured by the Colorado Iron Works. Of course, Western Machinery Co. supplied the full HMS plant now being used on the sand fraction at Glen Canyon. Our sincere apologies to Southwestern, Western Machinery and to Merritt-Chapman & Scott.

(Continued on page 36)

ANY WAY YOU LOOK AT IT...

NEW

Rubber Spiral Idler lasts far longer, prevents build-up of sticky materials



This new rubber spiral idler lasts far longer than conventional idlers in corrosive atmospheres or exceptionally abrasive service. And its exclusive self-cleaning rubber spiral prevents build-up of even the stickiest materials.

Here are some of the rubber spiral idler's advantages:

- **SELF CLEANING.** As the spiral turns, it "works" any material out of the grooves as they change shape. This action is most effective with sticky materials which tend to build up on common types of idlers.
- **CONTINUOUS BELT SUPPORT.** The new rubber spiral design "moves" along the entire width of the belt; therefore, pinching and sharp bending of the belt are eliminated.
- **SELF TRAINING.** Belt training problems are greatly reduced by readily conforming rubber spiral, and by elimination of material build-up.
- **EASY REPLACEMENT.** The spiral, wire rope, and bearing assembly simply lifts out of its brackets—no tools needed. Complete idler fits standard conveyer stringers.
- **TRUE OPERATING ECONOMY.** Under conditions where conventional idlers fail prematurely, the Hewitt-Robins spiral idler will pay for itself many times over.

Deliveries of this revolutionary new idler are now being made in 18, 24, 30, and 36 inch belt sizes. In addition to the type shown, it is also furnished with a spreader frame for use in wire rope conveyor systems. For further information check your H-R distributor, or write Hewitt-Robins, Stamford, Connecticut. Ask for Bulletin 7-19.

HR HEWITT-ROBINS

CONVEYOR BELTING AND IDLERS...POWER TRANSMISSION DRIVES
INDUSTRIAL HOSE...VIBRATING CONVEYORS, SCREENS & SHAKEOUTS

H-R Product Manufacturing Plants in Buffalo, N. Y. • Chicago, Ill. • King of Prussia, Pa. • Passaic, N. J. Amsterdam, Holland • Johannesburg, South Africa • London, England • Montreal, Canada • Paris, France

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Serving the Construction Industry . . .

Above: This dramatic view of Shasta Dam in California demonstrates the progress made by construction engineers in conserving water supply, preventing flood destruction and to provide water needed to make arid or drought-stricken land useful again.

SYMONS® CONE CRUSHERS

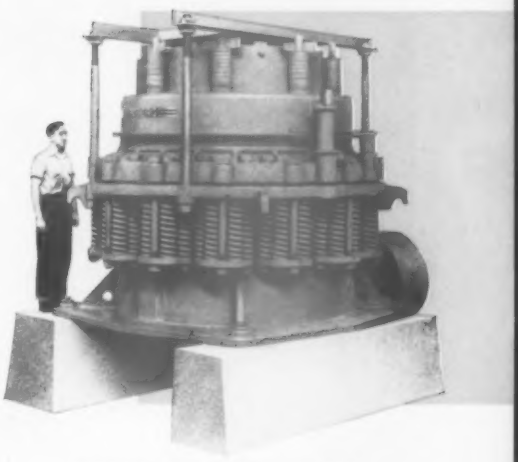
produce big tonnages of quality construction materials at low cost per ton

Illustrated here are typical examples of the vast contributions to the progress of mankind being made by the construction industry. Technological advancement in civil engineering of huge construction projects such as these call for rigid specification aggregates, crushed sand and cement. To meet the constantly growing demand for vast tonnages of these quality construction materials, Symons Cone Crushers have long been the first choice of leading producers throughout the world.

For in the production of construction materials . . . *as in all of the great ore and industrial mineral operations the world over* . . . there has been no record to equal the performance of Symons Cone Crushers that have so consistently and efficiently produced great quantities of finely crushed product at low cost.

Whether you are a contractor, operator, construction engineer, designer or manufacturer, it will pay you to specify and use Symons Cone Crushers . . . as well as the other Nordberg Machinery for the construction industry . . . *all* designed and built to deliver maximum output at lowest possible cost. *Write for literature.*

SYMONS . . a registered Nordberg trademark known throughout the world



SYMONS CONE CRUSHERS

. . . the machines that revolutionized crushing practice . . . are built in Standard, Short Head, and intermediate types, with crushing heads from 22 inches to 7 feet in diameter—in capacities from 6 to over 900 tons per hour.

Far left: To meet the challenge of the jet age, engineers and contractors are being called upon to build and expand airport runways to handle the ever-increasing traffic. (View shows Lambert Field, St. Louis).

Left: This view of one of the interchanges on the high speed Detroit expressway is a striking example of the contribution the construction industry is making to the tremendous highway expansion program.

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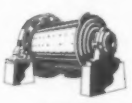
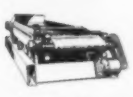
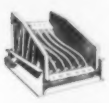
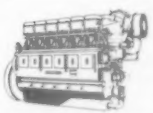
SYMONS PRIMARY GYRATORY CRUSHERS


NORDBERG GRINDING MILLS


SYMONS VIBRATING SCREENS


SYMONS VIBRATING GRIZZLIES

ROTARY KILNS and COOLERS


NORDBERG ENGINES

NORDBERG MFG. CO.
Milwaukee 1, Wisconsin

NORDBERG

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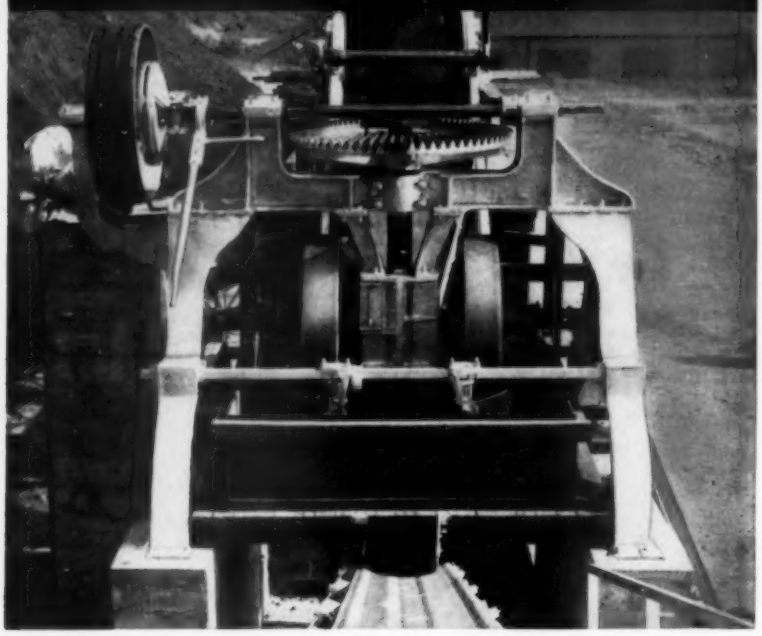
HUBER-WARCO grinders



solves aggregate grinding problems

Whatever your capacity requirement for aggregate reduction, there's a Huber-Warco GRINDER to meet your needs. In a capacity range of from 15 to 80 tons per hour, Huber-Warco GRINDERS grind cinders, pumice, slag, haydite and a wide range of quarry and mine products, quickly and efficiently. Huber-Warco GRINDERS handle material wet or dry . . . require low power consumption . . . can be adjusted to meet volume and size requirements . . . require a minimum of maintenance . . . and provide years of trouble-free operation. If accurate, economical grinding poses a problem in your plant, you owe it to yourself to investigate the merits of a Huber-Warco GRINDER. Write today for details.

A product of HUBER-WARCO COMPANY, Marion, Ohio, U. S. A.

HUBER-WARCO COMPANY, Marion, Ohio, U.S.A.

☐ Please send me details on Huber-Warco Grinders for aggregate reduction.

Name _____

Title _____

Company _____

Address _____

City _____ Zone ____ State _____

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HUBER WARCO

INDUSTRY NEWS

(Continued from page 33)

Mr. Meyer, executive vp. of Bestwall, receives trophy from John W. Brown, outgoing association chief

Gypsum Assoc. awards plant safety trophies

GYPSUM-PLANT SAFETY AWARDS for outstanding 1958 safety records went to plants of Bestwall Gypsum Co., U. S. Gypsum Co. and the Celotex Corp. A record of no lost-time accidents for the year won the Oakfield, N.Y., plant of U. S. Gypsum the Presidential Trophy of the Gypsum Association. And the Fort Dodge, Iowa, plant of the Bestwall Gypsum Co. won the association's Citation Trophy for outstanding safety performance. Award for the plant showing the most improvement in accident reduction during 1958 was presented to the Port Clinton, Ohio, plant of the Celotex Corp.

The awards were presented at the association's recent annual meeting in Chicago. During 1958 a new low-frequency rate for lost-time accidents was set. The 49 plants entering the contest had an average rate of 4.13, compared with the former record 4.55 of 1956.

Sand screening, settling booklets are available

TWO BOOKLETS on sand preparation that were originally published as a service to ROCK PRODUCTS readers are still available and may be had by writing this magazine. Nathan C. Rockwood's *Screening Fine Materials*, copyrighted in 1946, is an authoritative discussion of determining factors in the operating efficiency of vibrating screens.

Another volume, *Fundamental Principles of Sand Settling* (copyright 1929 and 1943) was written by the late Edmund Shaw as a practical guide to commercial sand producers. A limited number of these standard references still on hand will be given to individuals requesting them.

(Continued on page 38)

PROFIT NEWS FOR POWER USERS IN THE

all purpose power line

(20 TO 1650 H.P. IN ONLY 3 CYLINDER SIZES)

Now you can enjoy all the benefits of GM Diesel standardization in every type of equipment and still buy the best makes of equipment on the market

GM Diesel engines are offered in more than 1800 applications of power equipment built by over 250 leading manufacturers—wider availability than any other Diesel.

Only by standardizing on GM Diesel will a user get *all* the benefits of engine standardization—for *only* GM Diesel covers the entire power range with only 3 cylinder sizes.

Widest parts interchangeability pays off for operators in lower parts inventory requirements—many parts for a 33 H.P. "Jimmy" Diesel fit a 1650 H.P. "Jimmy."

GM DIESEL

PARTS AND SERVICE WORLDWIDE

DETROIT DIESEL ENGINE DIVISION, GENERAL MOTORS, DETROIT 28, MICH.

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario

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RECOGNIZE THIS LOT?

It's the lot of a Caterpillar Dealer, one of over 300 in the U. S., offering you the best buys in used equipment!

No matter what you want in used equipment, no matter what the price range, your Caterpillar Dealer is headquarters for your best buy. No other dealer offers you "buys" with this protection:

BONDED BUY

1 **A "BONDED BUY"** up to $10,000 on used Cat-built equipment—your guaranteed assurance of satisfactory performance on *all* parts of the machine during the guarantee period.

2 **A "CERTIFIED BUY"**—his written guarantee covering units of any make.

3 **A "BUY AND TRY"** deal—his written money-back agreement on units of any make.

For the best buys in your area, to be *sure* of what you're buying, see your Caterpillar Dealer. You'll find him listed in the Yellow Pages!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

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BEST BUYS IN NEW AND USED EQUIPMENT

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INDUSTRY NEWS

(Continued from page 36)

Cement industry attracts new firm

NATIONAL GYPSUM CO. is the latest of several firms new to the cement industry to invest in this construction material.

The Buffalo, N.Y., gypsum maker gets the Huron Portland Cement Co., Alpena, Mich., in a stock exchange in which Huron stockholders receive slightly more than a million shares, with present market value of about $67 million.

Terming the acquisition "the most important growth investment in our 34-year history," National chairman Melvin Baker noted that Huron's 1958 sales were $32 million. National's sales last year were $163 million. At the stockholders' meeting April 28, Mr. Baker said that growing highway and other construction markets should make the new division a valuable one. Figures he gave to reinforce this belief: Population is expected to rise 30 million in the next 10 years, a 16 percent jump; housing starts are expected to average 1.5 million annually during the decade, compared with 1.2 million at present.

National also got stockholder approval of a plan to increase common shares authorized from 5 million to 10 million. The additional shares will be used for stock dividends and further acquisitions, Mr. Baker explained. The firm is seriously considering the purchase of at least two unnamed companies. In fact, the firm hopes to grow to "two or three times its present size" in the coming decade, according to Mr. Baker. National recently moved into another new industry—ceramic tile—with the purchase of American Encaustic Tiling Co. and The Olean Tile Co.

Penn. State to hold drilling symposium

A SYMPOSIUM ON EXPLORATION DRILLING will be given October 8 to 10 by Pennsylvania State University, at midstate State College. Five technical sessions will be held at the meetings: 1) statistics and operations research in exploration, 2) bit design and rock penetration, 3) improving core recovery, 4) drilling and sampling of unconsolidated materials and 5) innovations and case studies in drilling practice. The program will be of interest to engineers, geologists, contractors and operators, the school notes.

The symposium is one of three sponsored jointly by the departments of engineering of the University of Minnesota, Colorado School of Mines and Penn State. The Rock Mechanics Symposium was held this year at the Colorado school in April. That school will also sponsor the Drilling and Blasting Symposium in 1960.

Cubans form crushed stone association

CUBAN CRUSHED STONE PRODUCERS have formed their own national association, Asociacion Nacional de Operadores de Canteras, president Rogelio Novo reports. Members present at the organizational meeting are shown above: seated, left to right, H. Garcia; J. Ayala, treasurer; Rogelio Novo, president; Ing. J. Silva, first vice president; J. M. Alonso, secretary; standing, left to right, L. Martinez; M. Varona; J. A. Beguiristain; S. Garcia Montes; Ing. J. Abadin; H. Tabares; E. Fernandez. *(Continued on page 40)*

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D9

D9s take another hard work job in stride

Near Santa Anna, Texas, there's a vein of 99% pure silica sand 30 feet deep—enough to last one hundred years at present removal rates. To get to the sand, the Santa Anna Silica Sand Company has to blast and 'doze away a 60-foot layer of hard rock and shale overburden.

Working two shifts a day, two Caterpillar D9 Tractors move 2,000 yards a day, six days a week. It's all uphill for distances of 250 to 300 feet—but it's no struggle for the mighty D9s. One racked up over 5,200 hours and the other had almost that many—before the rails needed replacement. "That's really long wear when you consider the conditions they work in . . . all rock, shale and sand," observes Executive Vice President Robert L. Markland.

Conditions like these let the D9 really prove its superiority. Thirty tons of work-power, sparked by a 320 HP (at the flywheel) Turbocharged Cat Diesel Engine, pile into the job and keep production up in the roughest going.

For all its mighty power, the D9 is maneuverable and responsive. Hydraulic boosters help with braking, steering and clutching. The exclusive Caterpillar oil clutch rarely needs adjustment. The optional D9 heavy-duty torque converter transmission has the flexibility to quickly compensate for load changes. And now the D9 has new lifetime lubricated rollers and idlers that are service-free until time for rebuilding.

A new dry-type air cleaner that removes at least 99.8% of all dirt and dust from engine intake air during *every* service hour, under *any* conditions, makes the D9 even better suited for work in pits and quarries.

What can the D9 do to take the meanness out of your job, increase your production, bring your costs down? Your Caterpillar Dealer won't just tell you—he'll *show* you! Right on your job! Call him *now* for a demonstration date.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

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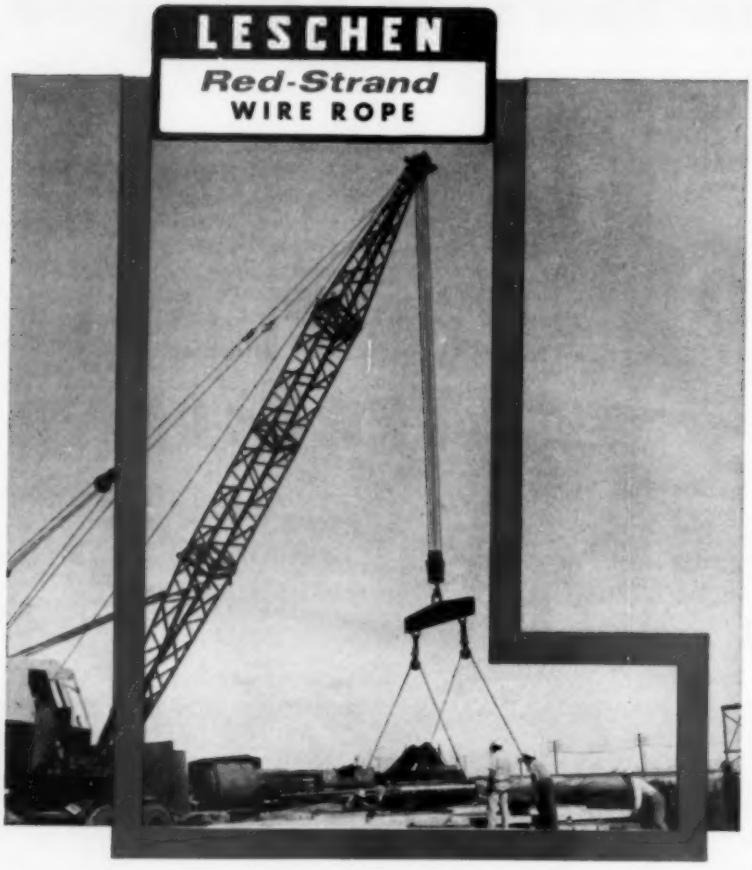
THE TAKE-CHARGE D9—
BUILT FOR THE HARD WORK

when the going gets rough-

give 'em "L"



When the load is on the crane, you'll be glad you rigged with *Leschen*—the wire rope that's the same top quality in every foot of every reel. The new Leschen wire mill is designed to deliver exactly that. New machines . . . new processes . . . exclusive new continuous-flow technique—all as modern as tomorrow. Try Leschen Red-Strand Wire Rope now and see how its uniform quality makes your operation safer, your replacement time farther in the future. Make your next order Leschen! *Leschen Wire Rope Division, H. K. Porter Company, Inc., St. Louis 12, Mo.*

LESCHEN WIRE PORTER ROPE DIVISION

H.K. PORTER COMPANY, INC.

PORTER SERVES INDUSTRY: with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION, NATIONAL ELECTRIC DIVISION; Copper and Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Electric Furnace Steel—CONNORS STEEL DIVISION, VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION, FORGE AND FITTINGS DIVISION, LESCHEN WIRE ROPE DIVISION, MOULDINGS DIVISION; and in Canada, Refractories, "Disston" Tools, "Federal" Wires and Cables, "Nepcoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD.

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INDUSTRY NEWS

(Continued from page 38)

Biggest U.S. kilns reach Dundee Cement

THE FIRST OF TWO 460 KILN SHELLS for Dundee Cement Co., Dundee, Mich., was shipped recently by F. L. Smidth Co., New York City. Reportedly the largest ever made in this country, the shells were made for Smidth by Chicago Bridge & Iron Co. at its Greenville, Pa., plant.

Too large to travel the entire distance by rail, the shell sections moved the last part of the trip, from Conneaut, Ohio, by ship and truck. The other kiln for this big plant was also shipped by the last week in May. Photo, courtesy of Dearborn Machinery Movers, shows a piece of the shell arriving at Dundee.

Cement shipments up 32% in March over 1958 month

IN MARCH U. S. Portland cement plants shipped about 23 million bbl., a 32 percent rise over March, 1958, the Bureau of Mines reports. And shipments for the first quarter were up a healthy 25 percent over the same 1958 period.

Biggest gains were reported in the Plains and South Atlantic states, some of which had gains in shipments of over 40 percent during the quarter, above the same 1958 quarter. Percent of capacity used by the industry: 72 percent during March this year, as compared with 58 percent in 1958.

Credit correction

THE EQUIPMENT LIST on p. 141 of the May issue of ROCK PRODUCTS incorrectly credited T. L. Smith Co. with screens and sand preparation units.

The maker of this machinery was Smith Engineering Works whose trade name is Telsmith. Our regrets to both of these manufacturers.

(Continued on page 45)

B.F.Goodrich

B.F.Goodrich tires handle the tough jobs at mammoth Niagara Power Project

UNDER construction at Niagara Falls, N.Y., are the powerhouse, waterways, reservoir and intake—all part of the gigantic $720-million Niagara Power Project. Shown above: site of 110′ x 50′ excavation for one of the twin, 46′-wide, covered intake conduits. On the job: a fleet of trucks equipped with B.F.Goodrich tires and owned by Merritt-Chapman & Scott Corporation, largest contractor on the project.

These trucks haul ton after ton of rock and overburden from the excavation to the spoils area, work round-the-clock, 6 days a week, under severe operating conditions. In spite of this, B.F.Goodrich Rock Service tires are still going strong after 3,135 hours of service!

The Rock Service tread is specially-compounded to resist rock cuts and snags. Massive double-chevron cleats give extra traction in forward or reverse. Thanks to the special B.F.Goodrich FLEX-RITE NYLON cord body, Rock Service tires are virtually immune to heat blowouts and flex breaks. Result: you get longer tire life—more retreadable tires!

Other B.F.Goodrich products at work on the Niagara Power Project are conveyor belting, air hose, protective clothing and footwear. Maintenance and service programs for tires and industrial products are also in operation—all part of the new B.F.Goodrich Unified Contractor Program. No matter what your off-the-road job, B.F.Goodrich is ready to serve you—and help you save. Your Smileage dealer is listed under Tires in the Yellow Pages of your phone book. *The B.F.Goodrich Co., Akron 18, Ohio.*

Specify B.F.Goodrich Tubeless or tube-type tires when ordering new equipment

B.F.Goodrich *off-the-road tires*

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YARDS AHEAD

CW-226 A COMP

MODEL CW-226

2-axle, self-propelled scraper designed for rated capacities of:

26.0 Cu. Yds. Struck
36.0 Cu. Yds. Heaped

Travel Speeds	to 34.4 m.p.h.
Load Capacity	78,000 lbs.
Interchangeable with Curtiss-Wright model CWD-221 Rear Dump	21 Cu. Yds. Struck 31 Cu. Yds. Heaped 70,000 lb. Capacity

CURTISS-WRIGHT
SOUTH BEND
SOUTH BEND,

. . . NEWEST AND LARGEST OF LETE LINE OF EARTHMOVERS!

The 26 yd. CW-226 is the newest and largest addition to the Curtiss-Wright line of self-propelled scrapers . . . and the newest and largest *practical* unit for your job. It's a *high speed* machine with *exclusive* Curtiss-Wright "Roto-Gear" steer and 375 h.p. engine for the maximum in speed and control—A *high output* machine combining all the tested and proven features that give heaped loads, smooth spreading and fast cycles—A *dependable* machine with rugged basic design and unit construction for long life and simplified maintenance . . . All these features put the Curtiss-Wright CW-226 years ahead in design—yards ahead on the job, and put YOU dollars ahead on the profit sheet . . . see it in action!

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INDIANA

A. P. GREEN
Plastic and Castable Refractories

Give Longer Service... Lower Maintenance Costs In Kiln Hoods, Coolers and Dust Collectors

A. P. Green Monolithic Refractory Enclosure on Allis-Chalmers Air Quenching Cooler

A. P. Green Monolithic Hood in Modern Cement Plant

A. P. Green Monolithic Enclosure of Dust Collector Housing

A. P. Green Plastic and Castable Refractories form a one-piece, monolithic, air-tight refractory lining. There are no joints for dust to penetrate, bulging is eliminated, and structural strength is increased. No special shapes are required.

The use of A. P. Green Monolithic Construction is finding wide acceptance in all types of patented coolers. Both monolithic side walls and arches on patented cooler enclosures are setting new standards. They offer ease of installation, provision for positive and free flowing anchorage, and joint-free surfaces to resist dust penetration and failure due to bulging and buckling.

In kiln hoods, coolers, and dust collectors of some of today's most modern cement and lime plants, the real and definite advantages of monolithic construction provide longer service, reduced maintenance costs, and higher thermal efficiency. Your A. P. Green representative will show you how you, too, can enjoy these money-saving advantages.

A. P. Green offers a complete line of refractory products for the cement and lime industry. Whatever your requirement, for specific recommendations without obligation, contact your local A. P. Green distributor . . . he's listed in the yellow pages of your telephone directory.

A. P. GREEN FIRE BRICK COMPANY
MEXICO, MISSOURI, U.S.A.

PLANTS: Mexico, Mo. ● Woodbridge, N. J. ● Sulphur Springs, Texas ● Jackson, Oak Hill, South Webster, Ohio ● Climax, Pa. ● Philadelphia, Pa. ● Troy, Idaho ● Pueblo, Colo. ● Macon, Ga.

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A. P. Green REFRACTORY PRODUCTS
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(Continued from page 40)

New Ideal, Permanente plants top cement news

THE NEW TIJERAS, N.M., PLANT of Ideal Cement Co. and the planned Hawaiian plant of Permanente Cement Co. are biggest news items on cement plants this month. A plant to be built in Montreal with a 550-ft. kiln was also reported to ROCK PRODUCTS.

Ideal's new million-barrel plant near Albuquerque was set to open in May or June. A 375-ft. kiln and several 11 x 17-ft. ball mills highlight the plant's equipment complement. But Ideal clearly is proudest of the high degree of push-button centralized control built into the plant. One man at a control console oversees the operation from primary crusher to raw storage, and checks on burning by television. A second man controls the entire shipping operation from a second push-button console. The plant will employ 100 persons.

Permanente is spending more than $12 million for its 1.7-million bbl. Hawaiian plant on Oahu, set for completion in August, 1960. Plant site is Waianae, 28 miles from the capital city of Honolulu; finished cement will be hauled there for Hawaiian use and export. Honolulu cement-storage and truck load-out capacity is being increased to handle the new plant's production. To further serve the Pacific area market, the firm recently built a cement distribution station on Guam.

The Oahu plant will use coral rock as its basic raw material. A single 464-ft. kiln will burn the raw materials. Permanente has designed the plant to be attractive and largely dust-free, so as not to detract from the island's vacation atmosphere.

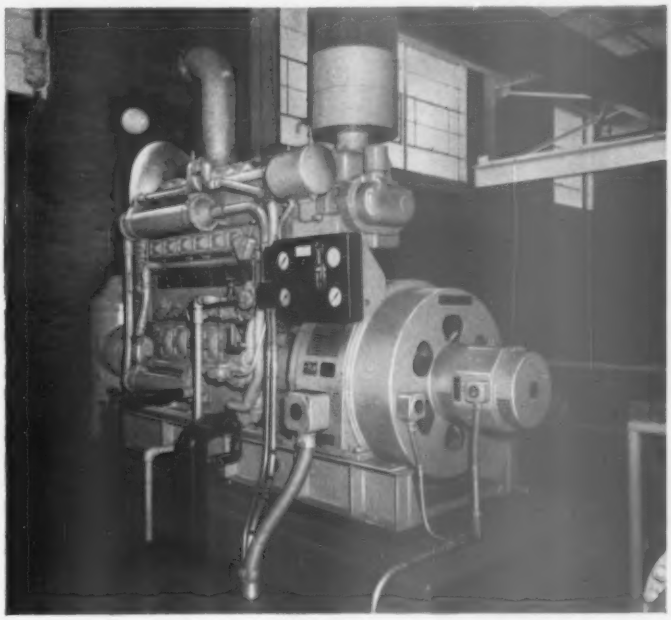
The plant will be Hawaii's first; the new Hawaiian Cement Co. will follow it by about a year with its own million-barrel plant at Honolulu. Cement shipments to Hawaii came to about 274,000 bbl. during the first quarter this year.

A new plant is scheduled to be built at Montreal, Canada, an important St. Lawrence Seaway port. A huge 15 x 550-ft. rotary kiln and two 11 x 34-ft. mills with 2,500 hp. synchronous motor drives are being built for the plant, Allis-Chalmers Mfg. Co. reports. Besides the kiln and mills, that firm is making a 7½ x 120-ft. air-quenching cooler of the counter-balance type for the kiln. The plant is being built by Miron & Freres, Inc.

(Continued on page 47)

Picture of O-P economy!

Ohio pumping station saves $300 a month using F-M Opposed-Piston standby diesel for both power generation and pumping



Compact, lightweight Model 38F5¼ O-P is rated 450 hp. at 1200 rpm., direct drives a 175-kw. F-M alternator and, through right-angle gears, an F-M Pomona Vertical Turbine Pump with 5.5 mgd. capacity at discharge pressure of 105 psi.

Electric power off the flywheel end, high-service pumping off the front—that's the standby job cut out for this Model 38F5¼ Fairbanks-Morse O-P Diesel in the Elyria, Ohio water works serving 60,000 people.

Called into service for 3 to 6 hours a day in the Spring of 1958, the O-P pumped water for $1.50 less per million gallons than purchased power—a $300 per month reduction, including savings on demand charges. Each Saturday the engine makes a test run as the sole high-service on the line.

Versatile as well as economical, the Model 38F5¼ O-P is also ideal for direct-driving other equipment off the rear, with front end of shaft driving an auxiliary generator, crusher, pump, etc. The O-P can be furnished for either diesel, dual-fuel, or spark-ignited operation, and is available as a complete packaged unit with all accessories attached to the frame. Write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

DIESEL, DUAL FUEL AND GAS ENGINES • LOCOMOTIVES • ELECTRIC MOTORS • GENERATORS
PUMPS • SCALES • COMPRESSORS • MAGNETOS • HOME WATER SYSTEMS

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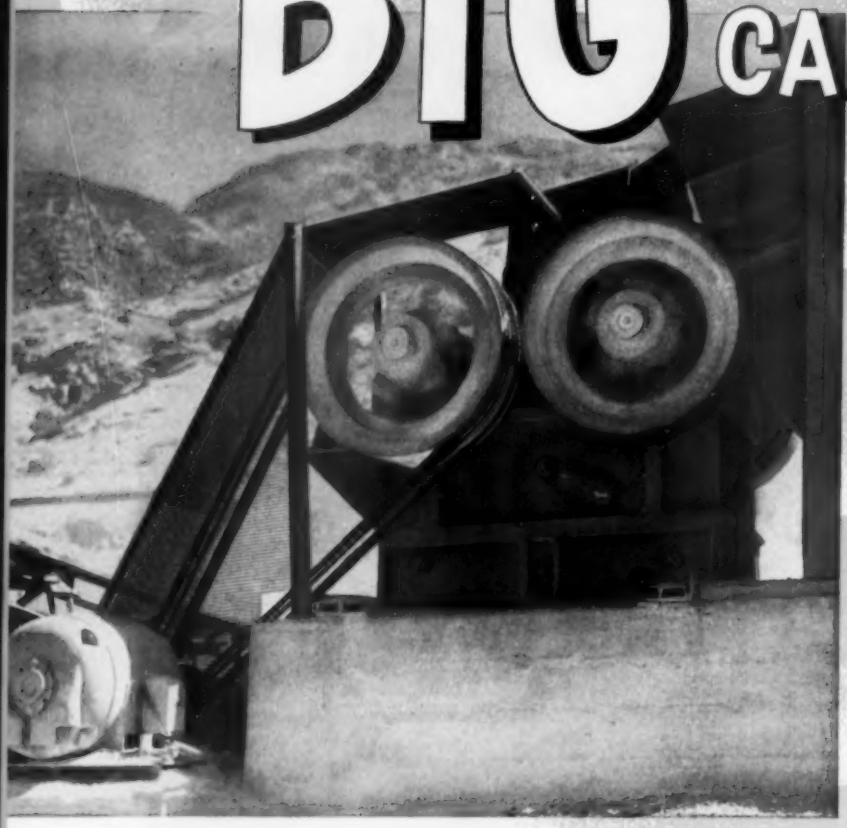
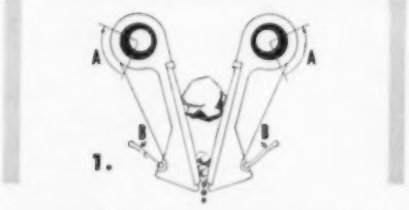
BIG PRIMARY CAPACITY

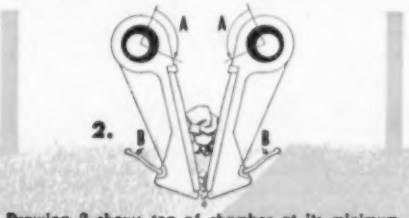


TWO MOVABLE JAWS GIVE YOU 40% TO 100% HIGHER PRIMARY CAPACITY THAN SINGLE-JAW CRUSHERS OF THE SAME SIZE

CEDARAPIDS TWIN JAW CRUSHERS



Drawings illustrate maximum throw of the two counter-rotating eccentrics, A. Since *both* jaws move, maximum opening at top of crushing chamber is larger. Coupled with higher RPM, this permits faster feeding. Drawing 1 also shows bottoms of jaws, controlled by steep-angled toggles, B, beginning to close for the secondary crushing action.



Drawing 2 shows top of chamber at its minimum opening as the two synchronized eccentrics swing inward and downward, forcing material deep into the chamber. Simultaneously, the discharge opening is widening for quick discharge of crushed material.

Think what it would mean in terms of overall plant production—and profit—to get 40% to 100% greater primary capacity than you're getting now with a single-jaw primary!

The exclusive Cedarapids Twin Jaw Crusher combines overhead eccentric design with *two* movable, synchronized jaws *operating at high speed* to provide the high velocity jaw action that crushes tremendous hourly tonnages of even the hardest material. Its fast feeding features, its force-feed design that permits crushing without abrasive rubbing, and its rapid discharge all help maintain the Twin Jaw's steady, high-volume production pace. With rubbing under pressure practically eliminated, owners report from five to eight times the jaw life they get from single-jaw crushers, and with much lower maintenance!

There are dozens of other Twin Jaw features you'll want to investigate. Bulletin TJ-1 contains every detail—send for it today, or see your Cedarapids Dealer.

Cedarapids
Built by IOWA

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U. S. A.

(Continued from page 45)

Canadians develop big Vancouver pozzolan deposit

AMATEUR PROSPECTOR FRANK HERBERT has found and developed a huge deposit of pozzolanic shale, estimated at 100 million tons, on Vancouver Island in British Columbia, Canada. Originally, the big shale deposit was examined as a possible source of clay for making expanded aggregate.

But the value of pozzolan as a cementitious material, and the quality of the Vancouver deposit, make its use as pozzolan desirable. Whereas the American Society for Testing Materials specifies that it contain a minimum of 70 percent silica, iron and alumina oxides, the Vancouver deposit contains 94 percent, according to tests.

A $500,000 plant for processing the pozzolan is planned at the deposit, which outcrops on a stream in thicknesses from 35 to 100 ft. Production should begin at the 100 tpd. plant in less than a year, reports Holdfast Natural Resources Ltd., the company formed to work the deposit.

Pozzolans are often used to replace up to 25 percent of the cement in projects having concrete sections more than two feet thick, where the concrete will contact soil and water, and in all exposed block and all pipe.

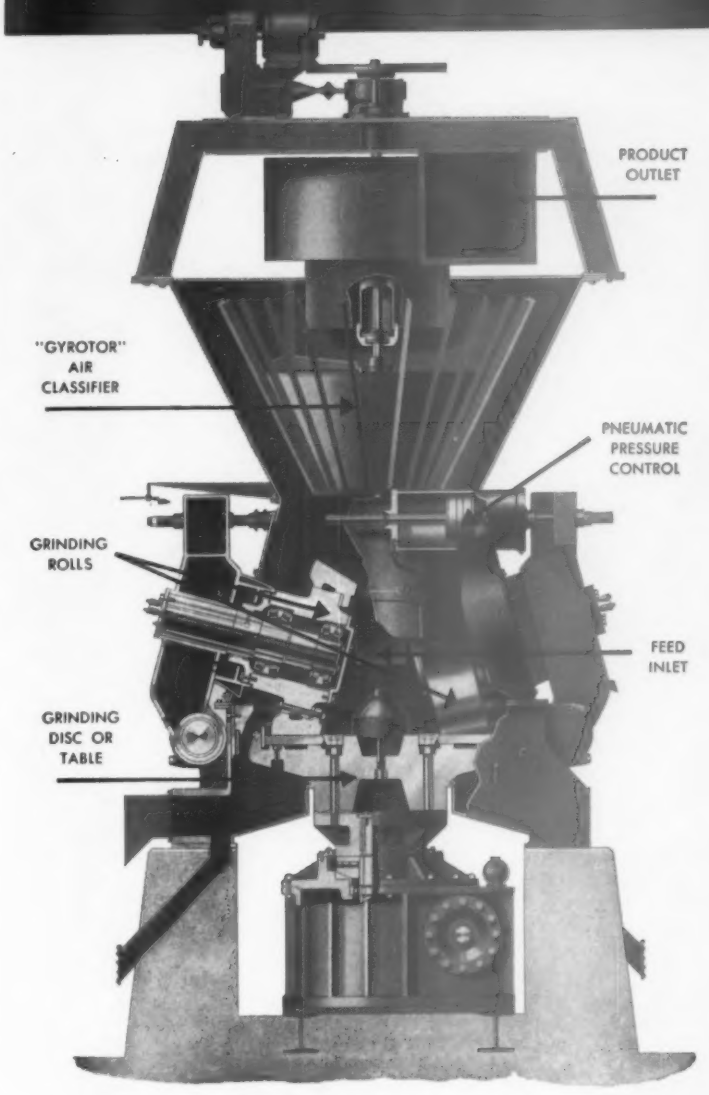
Pozzolans can improve the workability and watertightness, and prevent leaching of lime in concrete. They also decrease segregation of aggregates in concrete, resist acid attack by sewage and sea water, and cut the heat of hydration in setting concrete. Most big dams are made with some pozzolan to reduce this heat, which can cause cracking of concrete. High cost has limited the use of pozzolan in this country and Canada, *The Financial Post* reports.

Some 43,000 tons of pozzolan materials are being added to 142,000 tons of portland cement in building Priest Rapids Dam on the Columbia River in Washington state. Raw pumicite is taken from a pit five miles upstream, calcined and delivered to the dam for about 30 percent less than the delivered cost of portland cement. These facts were reported in a paper given at the Summer and Pacific General Meeting of the American Institute of Electrical Engineers at Seattle in June.

The Tennessee Valley Authority is using waste fly ash from its big electric power plants as a cement and sand replacement material.

(Continued on page 50)

DISC-ROLL MILL



The Hardinge Disc-Roll Mill is applied to dry grinding of minerals such as talc, limestone, coal, phosphate rock, bauxite, clays, celestite, and gypsum.

The Disc-Roll Mill incorporates pneumatic roll-loading. Since the pressure on the rolls can be released or increased at will, complete flexibility of operation results. The problem of over-loading is eliminated. Also, the Hardinge "Gyrotor" Classifier is standard equipment on the Disc-Roll Mill. This classifier provides very close control of the finished product over a wide range of sizes. Ask for Bulletin 52-7

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on tires or tracks...

Cummins diesels earn

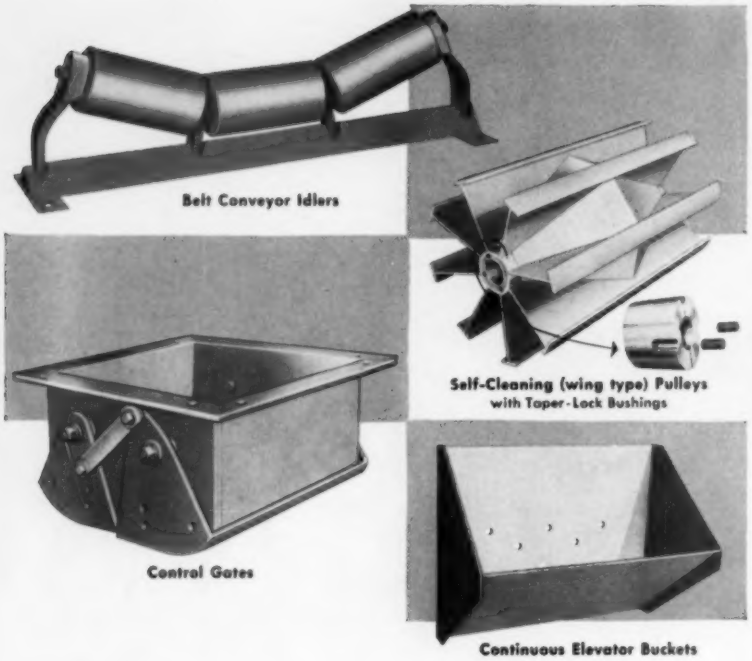
the most profit!

You can save as much as 50¢ per hour per unit with Cummins Diesels compared to other construction diesels. Coupled with this unequalled economy is the ease of maintenance, dependability and long life that has made Cummins world famous. It's the power that earns the profits! There are more than 30 Cummins construction models from which to choose-70 to 600 horsepower. Each is specially designed for heavy construction usage. Leading equipment manufacturers make Cummins Diesels available in more than 400 construction machines of every size and type. Another reason why Cummins Diesels earn more profit is the excellence of the Cummins Distributor network. More than 350 locations throughout the U.S. and Canada offer genuine Cummins parts – skilled, efficient low cost service. Specify the power that earns more profit-

Standardize on Cummins

CUMMINS

Cummins Engine Company, Inc., Columbus, Indiana



MARCO Ideas in Materials Handling Accessories

HELP INCREASE PRODUCTION AND LOWER YOUR COSTS

MARCO specializes in designing and manufacturing a complete line of modern accessories used in materials handling. The creative and sound engineering principles incorporated in MARCO equipment can help you gain greater efficiency of operation.

Belt Conveyor Idlers: MARCO equips each idler with precision ground ball bearings designed specifically to give greater load capacity, added years of idler service life and lower power requirements. Proof! At 300 revolutions per minute these anti-friction bearings will carry loads up to 860 lbs. per bearing.

Each bearing is pre-lubricated at the factory, then effectively sealed to eliminate field lubrication and reduce your maintenance costs.

Idlers fit any conveyor frame and are available in many types and sizes.

Conveyor and Elevator Pulleys: MARCO self-cleaning and solid steel pulleys offer outstanding advantages of machined faces and Taper-Lock bushings at a competitive price. Machined faces insure against pulleys being 'out-of-round', thereby increasing service-life of belt and pulleys. Taper-Lock bushings save time and trouble when mounting or demounting pulley. The MARCO line of pulleys is complete ...and delivery is prompt.

Control Gates: MARCO gates are engineered for easy installation and fast, smooth operation. Gates are operated by a positive linkage, instead of outmoded gears that wear out or become mis-aligned. Made of all steel construction and oversize wearing parts, these gates deliver maximum service under severe operating conditions. Available in 4 types and many sizes.

Continuous Elevator Buckets: Designed of two-piece construction and die-formed to insure uniformity. Continuous welds prevent leakage and give buckets added strength. Can be furnished with holes punched to standard punching diagrams or to suit your existing bolt patterns. MARCO makes the size and type elevator bucket to meet your exact requirements.

Compare and you'll see why materials handling accessories engineered by MARCO offer you more for your dollar. Get the complete facts from your MARCO distributor or contact E. F. Marsh Engineering Co., St. Louis 10, Mo.

MARCO®

engineered MARCO products:

Tubular Frame Belt Conveyors—Conveyor Idlers—Solid Steel and Self-Cleaning Steel Pulleys—Bucket Elevators—Control Gates—Feeders—Bins.

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INDUSTRY NEWS

(Continued from page 47)

Flintkote gets cement, gypsum producers

THE FLINTKOTE CO., maker of a wide range of building materials, has acquired Blue Diamond Corp., west coast gypsum maker, and planned to acquire Glens Falls Portland Cement Co., New York producer.

Blue Diamond is the sixth largest producer of gypsum products in the United States, and third largest producer of sand, gravel and truck-mixed concrete in Southern California, Flintkote reports. The new division has a gypsum and products plant at Blue Diamond, Nev., and three aggregates and eight concrete plants in Southern California. Sales last year came to $20.4 million. Noel J. Redmond, Blue Diamond president, has been named a Flintkote director.

Glens Falls Portland Cement Co., Glens Falls, N.Y., with capacity of 1.8-million bbl. yearly, has been acquired with full approval of Glens Falls stockholders. The new acquisition is Flintkote's tenth in the past three years. Early in 1957, the firm entered the cement business with the acquisition of Kosmos Portland Cement Co. of Louisville, Ky. Flintkote's 1958 sales came to $156 million; a new mark of more than $200 million is expected for 1959.

National's new Michigan gypsum mine opens

THE FIRST SHIPLOAD OF GYPSUM ORE from National Gypsum Company's new northern Michigan mine reached the firm's new Waukegan, Ill., products plant early in May, the company reports. The two new operations, plus a new products plant at Lorain, Ohio, comprise the company's big expansion drive in the Great Lakes states, which is costing $25 million.

The new mine is located at Tawas, Mich., at the mouth of big Saginaw Bay on Lake Huron. Enough reserves for 100 years of operation are available at the mine, located six miles from the lake. A rail line connects the mine with the ship-loading facilities. A second rail spur links the mine with the firm's nearby National City products plant. Plant manager Charles Hill of the National City plant also has charge of the new operation. Surge piles at both quarry and dockside permit plenty of storage.

(Continued on page 52)

AGGREGATE IS JUST SAND AND GRAVEL...

UNTIL WEMCO ENTERS THE PICTURE...

Today, you don't turn a sand and gravel deposit into real profits—unless you have a low-cost, volume operation—and a quality product!

So it is that so many operators turn to WEMCO for the shortcuts to sound, economical production. Through nearly 20 years' of experience in the aggregate industry, WEMCO has pioneered methods, engineered the equipment that consistently has been able to upgrade deposits to acceptable, marketable specifications. The WEMCO MOBIL-MILL, for example, is the first pre-fabricated, packaged heavy media separation plant, complete and ready for installation and operation; requires no additional labor, produces premium aggregate the first day! A complete line of other WEMCO EQUIPMENT for preparation, beneficiation and handling of aggregate, too, is available.

We'll be glad to furnish details on how WEMCO can work profitably for *you!*

A WEMCO man can give you details on getting the most out of your operation. Why not call him today?

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FAILING BLASTMASTER drilling blast holes.

BLAST IT...
with the BIG "F"

- for cement
- for crushed stone

LOOK TO THE BIG "F"

GEORGE E. FAILING COMPANY

FOR FINEST RIGS MADE

MAST	Electric welded tubular steel construction with rigid structural sections. Heavy crown block with two roller bearing sheaves angled to align over hole and hoisting drums. Clearance above rotary table, 31½ feet to handle 20-foot drill pipe for conventional drilling or 15 to 20-foot drill collars for use with down-the-hole tools. Hydraulically raised and lowered by one large double acting cylinder with safety check. Longer mast available.
DRAW WORKS	Two drums. Spiral bevel gear drive, oil bath lubricated. Each drum equipped with 14" two-plate friction clutch, controlled by a single lever. Sixteen inch self-energizing brake on each drum. Rated single line pull, 6400 pounds each drum. Capacity, 200 feet of ½" line each drum.
ROTARY TABLE	Opening 7½". Spiral bevel gears. Oil bath lubricated. Roller bearings. Simple, easy-to-handle kelly drive bushing. Provision made for use of block type slips. Pivoted back-up tong is mounted above table for breaking joints.
ROTARY TRANSMISSION	All helical gears, three speeds forward and one high speed reverse. Remote controlled from driller's station. Single plate 12" rotary clutch ahead of transmission. Rotary speeds range from 5 rpm to 220 rpm.
SUB-DRIVE	Quadruple roller chains in oil-tight case. Oil bath splash lubrication. Heavy duty ball bearings throughout. Unitized assembly with rotary clutch transmission and friction clutch.
AIR COMPRESSOR	Le Roi Model 100 S2, air cooled, six cylinder, reciprocating type. Rated for 600 cfm at 120 psi at 1200 rpm. Equipped with safety valve, air cleaner, unloading mechanism and surge tank.
COMPRESSOR ENGINE	GM 6031-C Diesel with hydraulic full load governors; 12-volt, 120-watt electrical system; clutch power take-off and cold weather starting kit.
CONTROLS	Carefully engineered design results in fewer controls and greatly simplified operation. All drilling controls are conveniently grouped at the driller's station, including the safety master clutch and the engine starter switch.
SWIVEL	Compact design, 2" opening, matched ball bearings, oil bath lubrication. Heavy trunnions provided for pulldown yoke.
YOKE	Cast steel, split type, with removable swivel trunnion bushings and renewable heat-treated shoes for pulldown guide rods.
KELLY	FAILING, patented, round, three-fluted, 4⅛" in diameter. Furnished in 23-foot length.
FRAME	All steel, electrically welded, with rod rack on right side and tool box conveniently located near driller's station.
WEIGHT	Approximate total weight of completely equipped drill with 31½ foot mast on Crane Carrier truck, 39,900 pounds.
MOUNTING	Truck or crawler optional.

GEORGE E. FAILING COMPANY

A SUBSIDIARY OF WESTINGHOUSE AIR BRAKE COMPANY

ENID, OKLAHOMA, U. S. A.

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INDUSTRY NEWS

(Continued from page 50)

Indiana producers discuss soil-aggregate plant mix

THERE HAS BEEN LITTLE SUCCESS with soil-aggregate shoulder and subbase mixes in Indiana and producers there are concerned, for this could be a big new market for aggregates.

Engineer-director Ralph Simpson of the Indiana Mineral Aggregates Association reported to members in a newsletter that "marvelous performance" has resulted in other states using stabilized base. He noted that Maryland used almost a million tons of stabilized base in 1957, replacing that state's previous practice of using two 6-in. courses of penetration macadam.

"Late in 1957, experimental shoulders were built in U. S. 40 east of Plainfield using special modifications of Indiana's compacted aggregate specifications. These shoulders have an astonishing record of most satisfactory service," he notes. When adjacent shoulders were a quagmire during the 1958 and 1959 spring break-ups, the experimental sections were firm and solid, Mr. Simpson reports. Yet no regular completed contract jobs have come close to this performance.

Mr. Simpson believes strongly that "good soil-aggregates are not cheap dirty gravel nor crusher-run stones. Apparently, production of successful materials is only achieved when proper controls are used . . . It is beginning to come to light that the really good soil-aggregates are, in the final analysis, plant mixtures, not plant-run products."

BPR says states cannot ban foreign road materials

OUTRIGHT BANS on imported highway materials in federal-aid highways were outlawed by Federal highway administrator Bertram Tallamy's decision of April 23. Mr. Tallamy said that, as of Jan. 1, 1960, the states may not ban foreign cement from their federal-aid projects, but may abide by the Buy American Act of 1933, if they wish. In general, the law means that domestic materials get a 6 percent price differential over imports. It is the same preference given U.S. materials on other federally financed construction programs.

The decision was made following reports of pressure in many states to ban lower-cost imported cement and steel on the highway jobs.

(Continued on page 57)

LONG HAUL—Even the longest Barber-Greene Conveyors are built of standardized components . . . produced on a precision, quantity production basis. They can be assembled in almost limitless combinations to cut the time and cost of any material handling job.

Long or short haul—it costs less to move materials with belt conveyors

Thousands of installations—ranging from a few feet to thousands of feet—prove that belt conveyors move bulk material at lowest cost.

No other machine is so simple in construction or requires so little maintenance. No other machine can deliver such high hourly capacities with so little power or attention.

Barber-Greene has given a new meaning to belt conveyor economy. Built of standardized components, Barber-Greene Conveyors are delivered sooner . . . require less engineering . . . are erected faster . . . give top performance . . . and are more easily altered to meet changing or expanding requirements. Being standardized, repair parts are readily available—usually from the stock of your local distributor.

SHORT HAUL—Even the shortest Barber-Greene Conveyors are available in standardized components in the width and length to suit your needs. These small conveyors provide the economical way to handle the widest range of materials with greatest flexibility.

56-7A-PE

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AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

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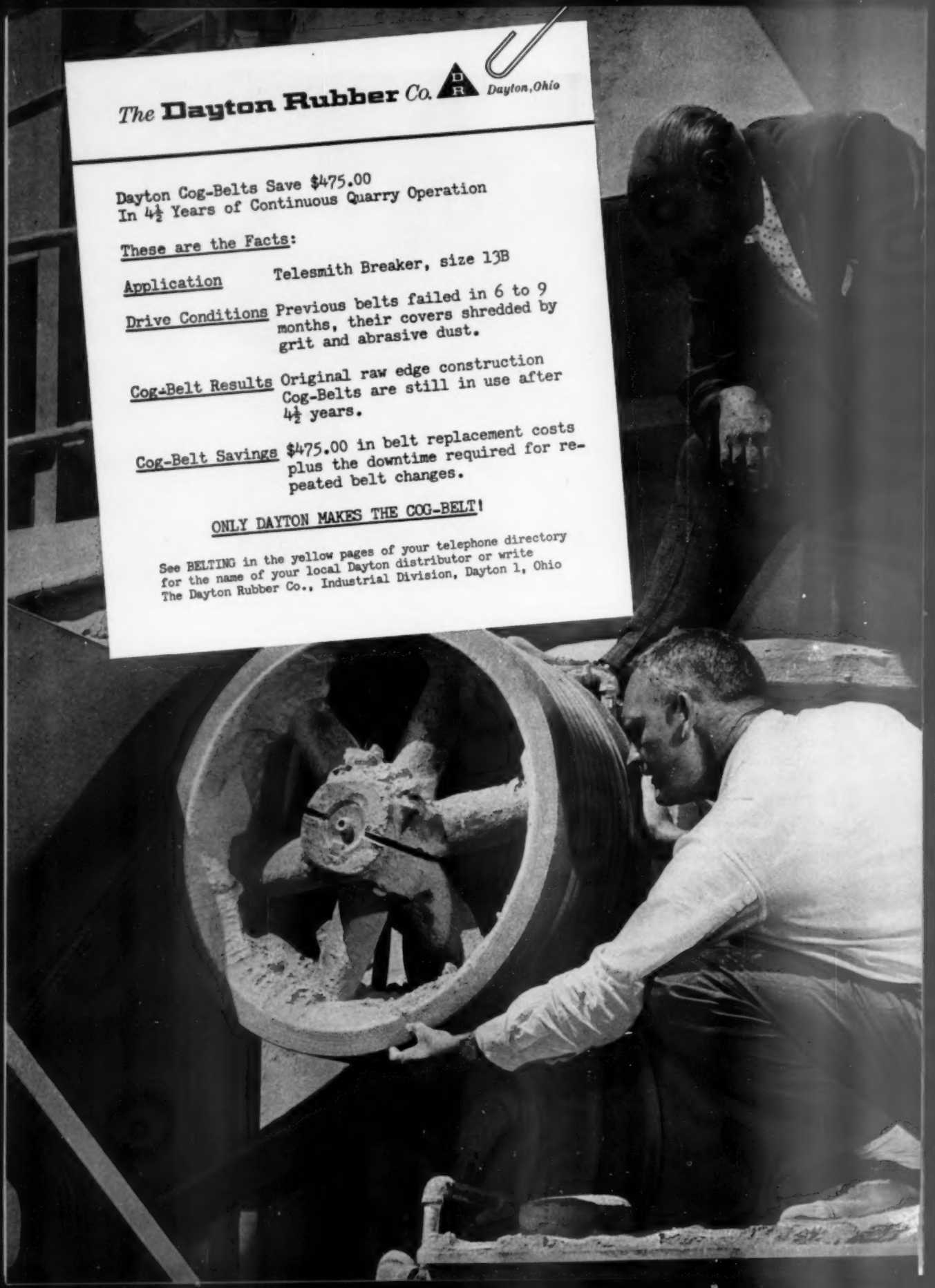

The **Dayton Rubber** *Co.* D R *Dayton, Ohio*

Dayton Cog-Belts Save $475.00
In 4½ Years of Continuous Quarry Operation

These are the Facts:

Application Telesmith Breaker, size 13B

Drive Conditions Previous belts failed in 6 to 9 months, their covers shredded by grit and abrasive dust.

Cog-Belt Results Original raw edge construction Cog-Belts are still in use after 4½ years.

Cog-Belt Savings $475.00 in belt replacement costs plus the downtime required for repeated belt changes.

ONLY DAYTON MAKES THE COG-BELT!

See BELTING in the yellow pages of your telephone directory for the name of your local Dayton distributor or write The Dayton Rubber Co., Industrial Division, Dayton 1, Ohio

YOU CAN'T BARGAIN WITH SAFETY

Wire Ropes may look alike... but it's performance that counts

The Image of CF&I stands for the top performance records of all CF&I steel products. For instance, take one of these products—CF&I-Wickwire Rope.

Many brands of rope *look* alike but the rope you buy must pay off in *performance*, not *appearance*. With Wickwire Rope you get a number of quality factors that lead to outstanding performance. These factors are "built-in" the rope through many quality controls and tests. Since CF&I performs all steel producing, wire making and rope fabricating operations within its own plants, exacting control and testing procedures can be carried out and supervised at every step. Here is just one of these procedures:

Both-Ends Physical Tests

Samples are cut from both ends of every coil of wire and given complete physical tests — for tensile strength, roundness, torsion and uniformity of diameter. Coils that fail any test are rejected for such critical applications as wire rope.

We have recently printed several folders that discuss many more Wickwire control and testing procedures, plus wire rope recommendations for specific equipment. To get a copy, contact the nearest CF&I sales office—but please *state your industry or type of equipment.*

Both-ends testing of wire ensures safety and top performance in CF&I-Wickwire Rope.

WICKWIRE ROPE

THE COLORADO FUEL AND IRON CORPORATION 6958

In the West: **THE COLORADO FUEL AND IRON CORPORATION**—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso Farmington (N. M.) • Fort Worth • Houston • Kansas City • Lincoln • Los Angeles • Oakland • Odessa (Tex.) • Oklahoma City • Phoenix Portland • Pueblo • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Tulsa • Wichita

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CF&I STEEL

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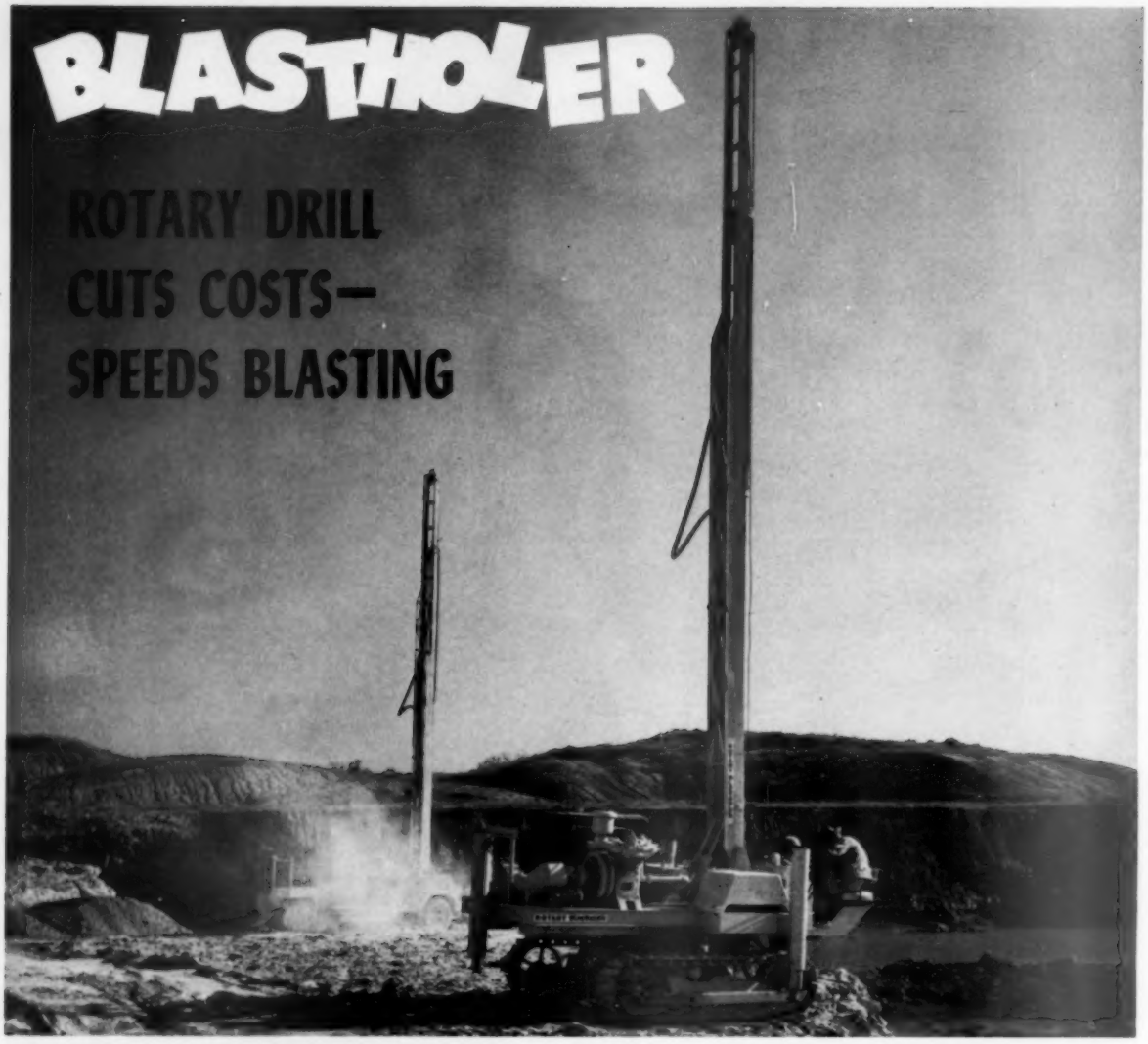

BLASTHOLER

ABOVE: Track and tire-mounted BLASTHOLERS drilling 25′ blast holes without adding steel in a hard limestone quarry.

This self-propelled rotary drill can really start your production on the up-swing — save you money, too! 2 to 5 times faster than other cumbersome equipment, the BLASTHOLER requires only one operator, carries own air for cleaning hole. Standard BLASTHOLER drills 20′ holes 3″ in diameter without adding steel. Optional equipment gives you depths to 50′. BLASTHOLER mounts on tracks or dual pneumatic tires to meet your terrain requirements. Cut costs — speed blasting! See the BLASTHOLER today!

BLASTHOLER DEALERS

The W. W. Williams Co.
Columbus, Ohio

Reid-Holcomb Co., Inc.
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Ray C. Call Co., Inc.
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Illinois Road Equipment Co.
Springfield, Ill.

Williams Tractor Co.
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Hi-Way Machinery Co.
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Bublitz Machinery Co.
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James W. Bell Co., Inc.
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Anderson Equipment Co., Inc.
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Wisconsin Drilling & Equipment Co., Inc.
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DRILLING ACCESSORY AND MANUFACTURING COMPANY, INC.

2006 South Industrial Boulevard — Dallas, Texas

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INDUSTRY NEWS

(Continued from page 52)

Top skid-resistant quality of blast-furnace slag told

E. W. BAUMAN, MANAGING DIRECTOR of the National Slag Association, reports on the outstanding skid-resistant properties of blast furnace slag in a new booklet. Technical Bulletin No. 241 of the American Road Builders Association notes that both in deslicking old surfaces and in building new highways, materials with blast furnace slag give the shortest stopping distances, according to tests.

In Pennsylvania, for instance, the state highway department was concerned with pavements slippery because asphalt had flushed to the surface, and also because exposed aggregates became polished. A fine-slag and asphalt-cement product, costing only .087 cents per square yard, did the best deslicking job at lowest cost. In other tests, Virginia highway engineers came to the same conclusion. Single copies of the report are free to ARBA members, and available at a cost of one dollar to non-members, from the association, World Center Building, Washington 6, D.C.

First potash from Canada leaves plant

THE FIRST TRAINLOAD OF POTASH left the new Saskatchewan plant of Potash Co. of America in March, reports *Industrial Saskatchewan* magazine. The shipment marks the official opening of the second big potash-producing area in North America.

Located near Saskatoon, the $20-million plant will produce 600,000 tons of finished product annually, with a value of about $12 million. Company officials hope to capture a large share of the 100,000-tpy. Canadian potash market.

Lime industry gets new consultant

A NEW CONSULTING ENGINEERING organization has been announced which will specialize in the lime and allied industries, the National Lime Association reports. It is International Lime Engineering, a division of International Lime and Stone Co., Chazy, N.Y., and its associated company, Dominion Lime, Ltd., Lime Ridge, Que. M. F. Parsons is chief engineer.

(Continued on page 58)

which egg is good?
which is bad?

From outer appearances you can't tell whether an egg is good or bad. The same applies to steel.

Replacement parts made by different manufacturers can look almost identical. Yet, the product of one will outwear competitive products by a substantial margin.

Because this is true, we invite you to COMPARE Columbia Armor-Tough crusher parts, under actual working conditions, with those you are now using.

Columbia leads the field in providing more wear where it counts, where rock meets metal. Columbia provides a full line of rugged crusher replacement parts, with most parts stock-piled for rapid shipment.

Once you make the acid test of service, once you COMPARE . . . you, too, will become a customer of Columbia Steel Casting Company.

Send for the new illustrated Columbia Bulletin No. 1063, featuring crusher, tractor, shovel, bucket replacement parts.

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Step-up Storage efficiency, cut Materials losses with Marietta concrete silos

For cement storage

A Marietta concrete silo system saves you time, money and labor. Any type of mechanical or pneumatic conveyor or filling and discharge method can be used with these silos. Whatever system you choose can be mounted directly, safely on the roof or side wall of a sturdy Marietta silo.

It will pay you to have expert Marietta engineers design the concrete silo storage system that best fits your needs. It's the best way to get the efficient, economical storage you want . . . reduce losses due to materials waste. Our staff will work closely with your consultants, contractors.

Write for your copy of the Marietta Modern Industrial Storage Systems booklet.

Only Marietta offers four types of concrete staves . . . assures you the best construction for your requirements.
Fast, complete silo erection by our own experienced crews.

Marietta CONCRETE DIVISION of AMERICAN-MARIETTA COMPANY
Marietta, Ohio

Branch Offices and Plants:
- Baltimore 21, Md.
- Charlotte 6, N.C.
- Jamestown, N.Y.

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INDUSTRY NEWS

(Continued from page 57)

Texas spends $142 million for road materials, group told

"THE TEXAS HIGHWAY DEPARTMENT is spending $142 million a year for road materials," principally aggregates and cement, Dewitt Greer, state highway engineer told the joint fifth annual convention of Texas aggregates and ready mix producers. The Texas Aggregates Association and Texas Ready Mixed Concrete Association met in Houston in April to elect officers and discuss common problems.

Engineer Greer went on to say that only $49 million was spent for road materials in the state just five years ago. In those five years, 4,200 miles of highways have been built in Texas. If the highway department's financial picture brightens and it is able to put $350 million of road work under construction this year, it will mean a record $190 million worth of aggregates and cement and other materials will be used.

New officers elected by the aggregates group are L. Ed Lee, president; Robert G. Pyle, vice president, and R. E. James, Jr., secretary-treasurer of Texas Aggregates Association. The new board of directors consists of Dr. Harold H. Moursund, Hugh McMillian, L. P. Gilvin, George H. Smith, John H. Langston and past president John H. Van Amburgh.

Calendar of Coming Conventions

1959

July 23-24, 1959
National Crushed Stone Association, Semi-Annual Board of Directors Meeting, Homestead, Hot Springs, Virginia

September 10-12, 1959
Empire State Sand, Gravel & Ready Mix Association, Fall Conference, Otesaga Hotel, Cooperstown, N.Y.

September 14-17, 1959
American Mining Congress, Convention, Metal Mining & Industrial Minerals, Denver, Colo.

September 23-26, 1959
Society of Mining Engineers/American Institute of Mechanical Engineers, Joint Meeting of Coal & Industrial Divs., Bedford Springs Hotel, Bedford Springs, Pa.

September 27-30, 1959
National Sand & Gravel Association, Semi-Annual Meeting, Board of Directors, Lake Placid Club, Lake Placid, N.Y.

October 1-3, 1959
National Lime Association, Operators Meeting, Sheraton Hotel, Phila., Pa.

October 8-10, 1959
Exploratory Drilling Symposium, Pennsylvania State University, University Park (College Park), Pennsylvania

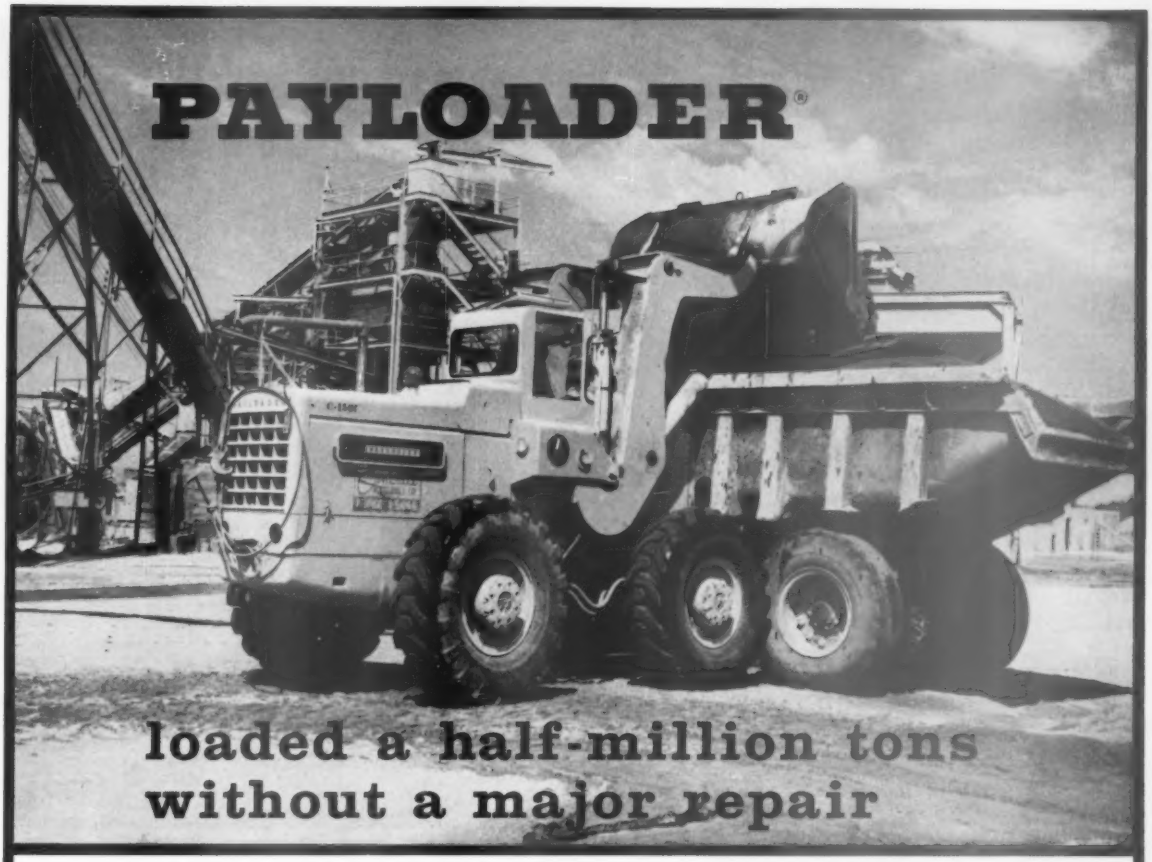
October 11-16, 1959
American Society for Testing Materials, Third Pacific Area National Meeting, Sheraton Palace Hotel, San Francisco, Calif.

October 29-30, 1959
National Slag Association, Annual Meeting, Boca Raton Hotel, Boca Raton, Florida

1960

February 15-19, 1960
National Sand & Gravel Association, Convention & Exposition, Conrad Hilton Hotel & Coliseum, Chicago, Illinois

February 22-24, 1960
National Crushed Stone Association, Annual Convention & Exposition, Conrad Hilton Hotel, Chicago



Good Equipment plus Good Maintenance Pays Off

Equipment Superintendent, Ed Becker says, *"We bought our first* 'PAYLOADER' *in 1946 and have been using them ever since because they have done such a fine job for us. For example, one loaded over half a million tons of stone and sand without a repair worth noting. The others have similar records of repairs costing pennies and availability for work near 100%."*

Concrete Materials Co., Sioux Falls, S. D., is a successful and busy materials plant producing crushed stone, gravel, sand, ready-mix and asphalt. Their "PAYLOADER" fleet will consist of six upon delivery of two big new model H-90's, on order. They are kept busy loading trucks, spotting and loading gondola cars, stockpiling, cleaning up and doing many other jobs.

President, R. S. Sweetman, believes in and practices a policy of "good equipment plus good maintenance", and keeps a close watch on the production of all machines. For example, he reports the following production figures for a Model HO "PAYLOADER" with 2¼ yd. bucket handling ¾" quartzite: loading dump truck — 17 tons in 2 min. 50 sec. (360 t.p.h. rate); loading two gondola cars with 40-ft. one-way haul — 116 tons in 27 min. (255 t.p.h. rate).

There is a proven "PAYLOADER" model that will pay off for you — sizes from 2,000 to 12,000 lb. carry capacity. See your Hough Distributor and ask about Hough Purchase and Lease Plans too.

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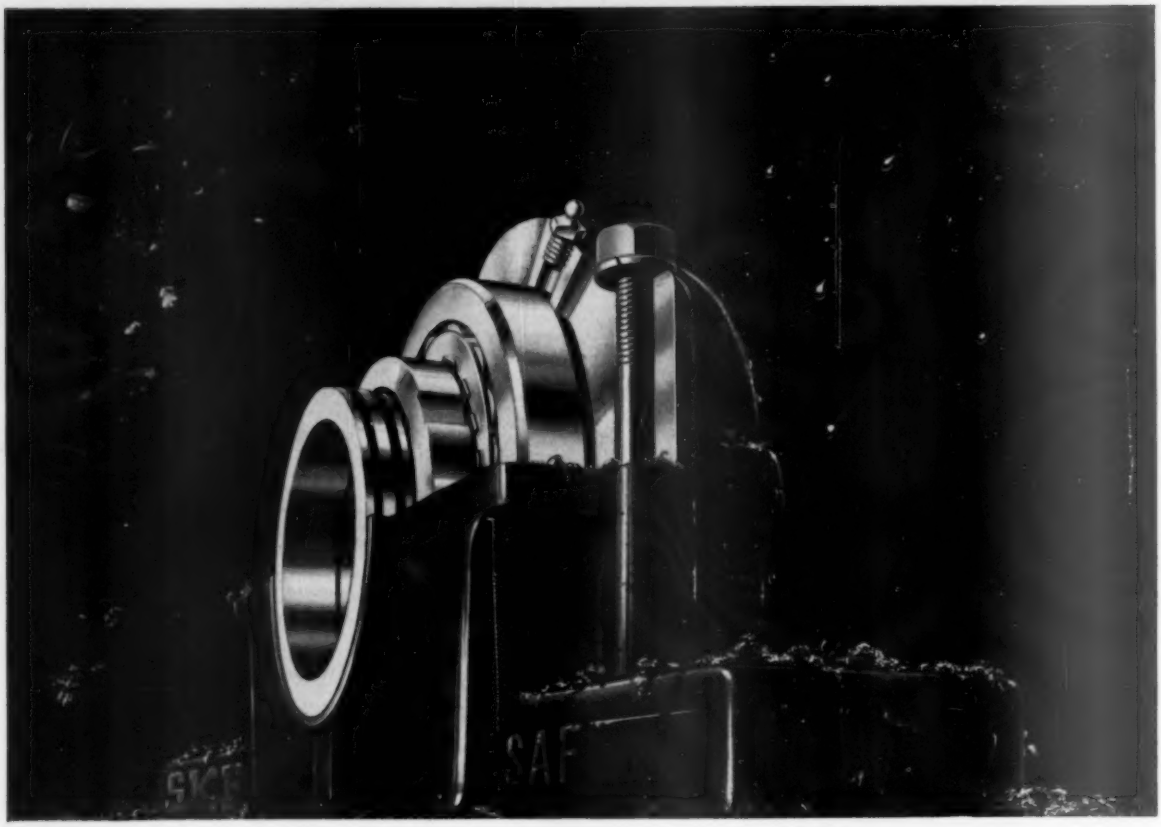


SKF Triple Seal provides best possible protection

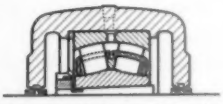
The SKF Triple Seal is a heavy duty, general purpose seal designed for use with oil or grease lubrication. It was developed by SKF to protect the bearing from foreign materials while providing an effective barrier against lubricant leakage.

The bearings in all SKF split pillow blocks are protected by triple seal rotating rings. The seals are triple lipped and are one integral unit. They are mounted with a slip fit on the shaft which permits unrestricted axial motion. Being of the labyrinth type, there is no friction between the rotating and stationary components; consequently, there is no wear and no replacement problem.

SKF Triple Seal Type SAF pillow blocks, with ball or roller bearings, give long trouble-free service. If your design involves abnormal operating conditions, cast steel housings (designated SAFS and SDAFS) are available. These heavy-duty pillow blocks are recommended for use in oil field machinery, steel and rubber mills, crushers, etc.

Standard type SAF split pillow blocks are available for ¾" to 10½" dia. shafts, and Type SDAF for 2 11/16" to 14" in adapter type mounting. Direct shaft mounting available for shaft shoulders up to 9 9/16" and shaft extensions up to 8 5/16". For data on both designs, send for Catalog 390.

SAF medium-duty pillow blocks contain the new SKF spherical roller bearings which offer 25 to 50% increased capacity, 2 to 3½ times longer life.



SDAF pillow blocks are designed for heavy-duty applications and also contain the new SKF spherical roller bearings.

5917

Spherical, Cylindrical, Ball, and "Tyson" Tapered Roller Bearings

EVERY TYPE—EVERY USE

SKF®

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

*REG. U. S. PAT. OFF.

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"1,000,000 cubic yards over our SECO SCREEN..."

Says Mr. Guy Young, General Superintendent, Collins Construction Company of Texas, Midland, Texas.

"and not ONE mechanical failure"

"Our SECO Screen has been producing with our portable crushing plant for two years now. As the primary scalper screen, this 5' x 10', double deck unit handles an average of 16 cubic yards of limestone rock per minute."

It's on-the-job performance like this that makes SECO's "years ahead" engineering pay off for you. Every SECO Vibrating Screen is designed for years of long, hard usage at maximum efficiency.

No matter how rough the job or how tough the specifications, there's a SECO Screen to meet your most exacting requirements with trouble-free operation.

Send for SECO 4-bearing Screen Catalog #204 or 2-bearing Booklet TB-21

Mr. Jack Graham, Crusher Foreman Collins Construction Company of Texas

SECO

VIBRATING SCREENS

SCREEN EQUIPMENT CO., Inc.

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HINTS AND HELPS

Profit-making ideas developed by operating men

Space heater

WHEN IT GETS COLD in Texas—and it does sometimes—this home-made space heater is just the think to take the chill off the shop. An enterprising shop foreman made this gas-fired heater with two small grease drums. Two drums were cut and welded together to make this lightweight, portable heater, and the whole assembly is simply set on angle legs.

The gas burner is a section of 2-in. pipe. One end is slotted and bent down over a female pipe cap on the end of the ⅜-in. gas line. A 1/16-in. orifice is drilled in the pipe cap to admit gas while the open slots in the 2-in. pipe provide secondary air to make a hot blue flame.

Firebricks inside the drums spread the flame and at the same time, protect the drums from rapid corrosion.

Harry Hess
Houston 4, Texas

Drilling weak formations

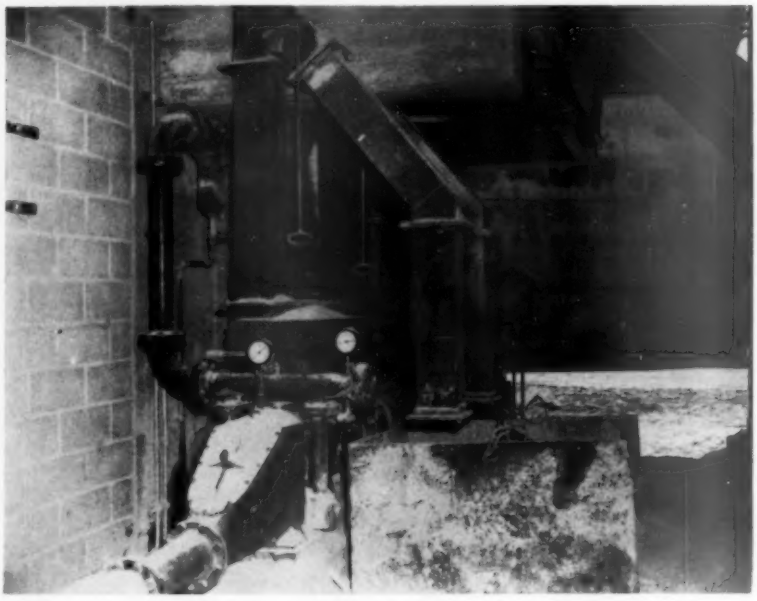
IT IS OFTEN a major problem to put down large diameter holes into soft rock or into unstable, weak formations. Very often, the rock collapses after the drill stem is withdrawn and before dynamite can be put into place.

A southern cement producer solved his problem with an ingenious drilling technique. Since he was drilling in a coral limestone formation where the water table was close to the top of the ground, the bottom of the hole would often cave in or fill with sand.

To overcome the problem, he drills with a hollow stem rotary drill. The kelley bar is removed and the core breaker removed. This leaves a clear passage down the stem for dynamite cartridges. When the hole is completely loaded, the hollow stem is carefully pulled out of the hole. The fused and wired dynamite is left at the bottom of the hole.

Other rock products producers drilling in the same formation have tried to do the same thing by using loading tubes. However, most of them have discovered that it is practically impossible to put the tube as deep into the hole as the drill stem had been.

Pneumatic system returns dust to kiln



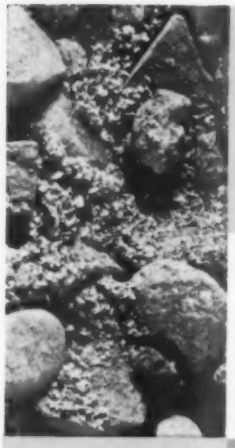
A CANADIAN CEMENT PRODUCER has put a pneumatic conveying system to an unusual application—handling dust from mechanical dust collectors.

The dust collection set-up is like most conventional systems, in which a mechanical dust collector of some kind just ahead of the electrostatic collectors strips out most of the coarse clinker from the exhaust air. Not only does this reduce the load of suspended material from the air stream going to the electrical units, but helps to reduce the temperature of the gases. Usually the dust from the mechanical dust collectors can be sent back to kiln feed.

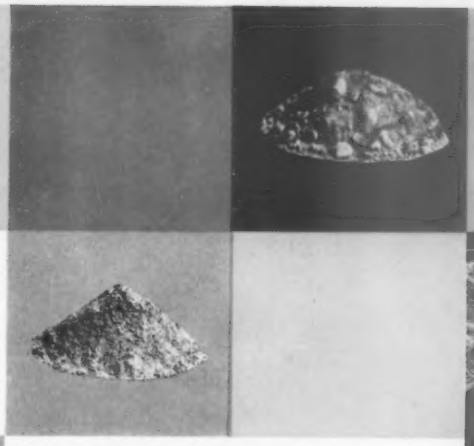
That is exactly the purpose of the pneumatic system. Collected dust is dropped from the bottom of the cyclones into chutes which load the feed mechanisms of the pneumatic conveyors. It is taken 400 ft. to the feed end of the kilns where it is introduced into the kiln along with new feed materials.

If there is any occasion when the dust is not wanted, gates in the chutes divert the dust to steel tote boxes to be discarded. *(Continued on page 64)*

IT PAYS TO ENGINEER YOUR PLANT!



to get the ***most*** *from your plant investment dollar*



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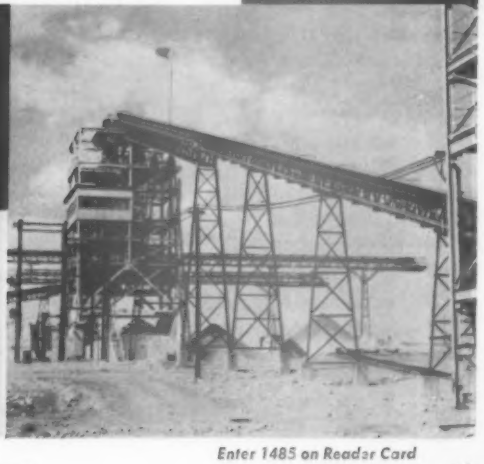
Your experience + WKE experience = profits!

If, for example, you must reduce production costs, meet specifications and make a profit at the same time, it is certain that you and the men of WKE working together can do it.

You'll have the advantage of *experience* gained in developing other plants, *experience* in solving a wide range of problems in design, engineering and construction—resulting in maximum production—with controlled costs.

You will profit by learning about the WKE approach to plant development—and the *most plant for the dollars spent!*

WKE®



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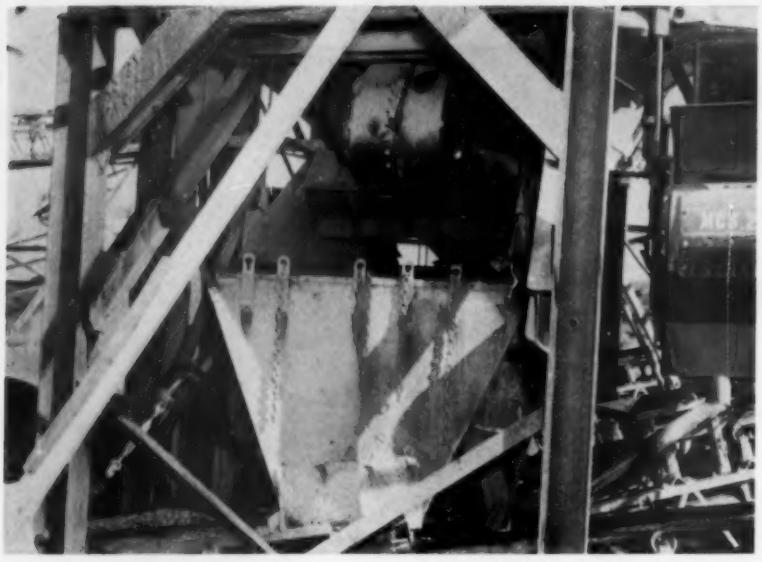
(Continued from page 62)



Fine screening wet material is back again

HOW TO MAINTAIN PRODUCTION when screening wet fines continues to be a nagging problem to many producers. It's a frustrating experience to see a screen operate for a short time, then shut down to be whipped, scraped or brushed to clear the blinded deck. There is very little else to do except grin and bear it.

A western sand and gravel producer has developed a system which seems to work well for its particular problem. Instead of having a man standing by ready to lash the deck of a dewatering screen when it blinds, a set of five strands of chain has been installed. The chains run the length of the screen and are secured at each end.

There is enough "give" in the center of even the tightest chain to beat a small area of the deck enough to keep a portion of the screen clear. All together, the chains have enough effect on the screen cloth to keep screening efficiency high most of the time. If the material becomes particularly difficult due to a change in the particle size, moisture, temperature or humidity, then the chains can be let out a notch.

The chains are then more loose and beat the screen cloth more severely. This accelerates wear on the cloth but it does keep the screen clear.

Add sand capacity

WHEN A MICHIGAN SAND and gravel producer's deposit began to yield more sand than expected, he was faced with a sand classifying problem. The increase would not justify another machine, yet it overloaded the existing water scalper. With the enthusiastic cooperation of the maker of the machine a 2-ft. addition was designed and installed. This short section with additional valves proved to be a most satisfactory solution to the problem.

Easy oil check

MOST MACHINES which run 24-hr. days must be stopped long enough to check their engines or motors. A Texas producer put a simple device in his diesel engines which lets him check the oil level without stopping the engines. This avoids delays and production losses.

A ⅜ in. diam. perforated pipe is inserted into the crank-case through the drain plug on the most accessible side of the engine—usually on the side away from the prevailing winds. Another pipe is inserted from the top which fits over the smaller pipe, and a female pipe is fitted with a welding rod or stiff wire. This rod is marked with standard oil level markings, and is inserted into the pipe assembly.

Since there is relatively little movement of oil within the pipes, the oil level can be checked with the engine running.

Harry Hess
Houston 4, Texas

Belt conveyor care

MOST PRODUCERS ARE AWARE of the technique of extending the useful life of a belt conveyor by turning the belt "end-for-end." This often equalizes wear and sometimes permits a belt to be re-trained on the idlers.

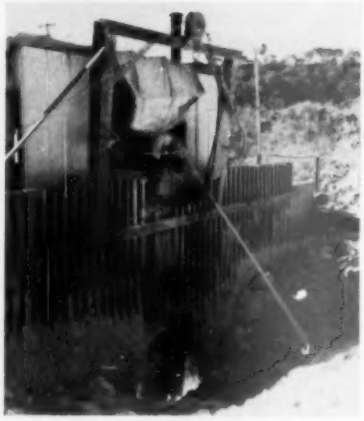
This gave one crushed stone producer the clue to improving the operation of his own belt conveyor system. He had put in a belt somewhat wider than necessary just to handle a peak load that occurred only 10 percent of the time but was about double the usual tonnage.

He arranged his feeder and loading chute to put the light, normal load off-center on the belt. Now any wear takes place only along one edge of the belt, and when it is time to reverse the belt, the load will occur on a practically new area of the belt.

Of course, the heavy, peak load is carefully centered on the belt. But here it does not add appreciably to the wear that is taking place nearer the edges.

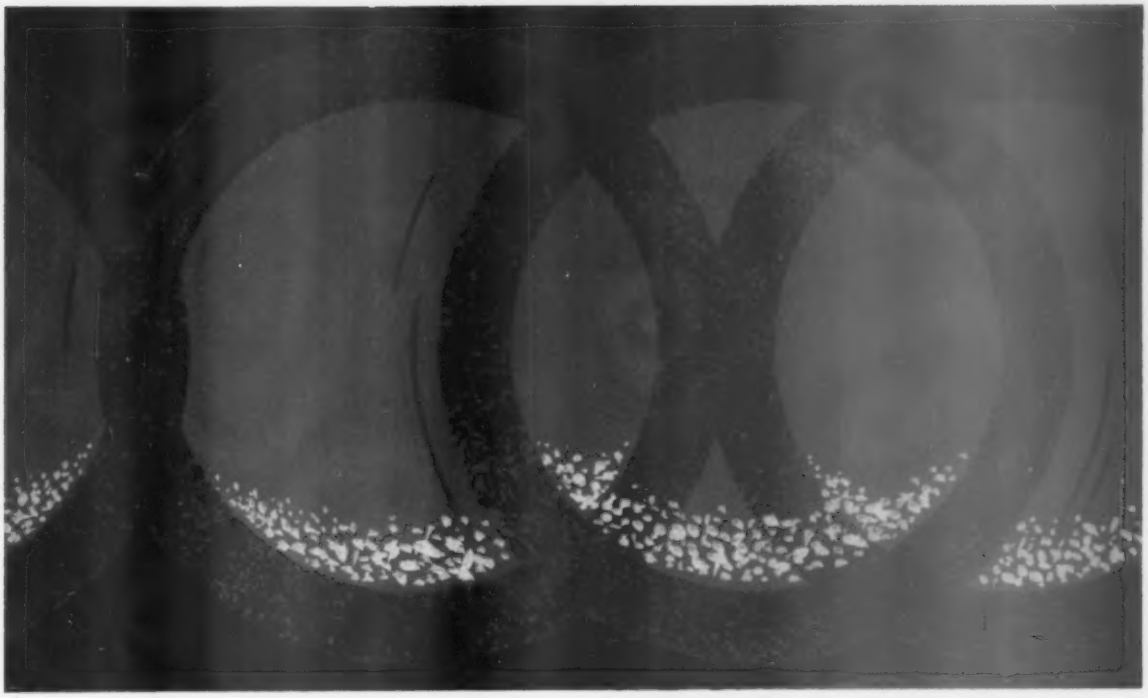
W. F. Schaphorst
Newark, N. J.

Loaded for bear



THIS SOUTHERN crushed stone producer takes no chances with his truck dump hopper choking up. A high pressure nozzle operates most of the time to keep the wet, sticky, quarry-run rock flowing. A counterweight makes it easier for a man to direct the stream right where it is needed.

If rock should still jam in the throat of the hopper, a large "fish hook" is available to snag the offending lump. The hook is operated from a hand-winch off to the side. The old rails which line the back of the hopper to adsorb impact make it easier for the operators to attack the keystone of any congestion in the throat of the hopper. END



CEMENT PRODUCER REPORTS SERVICE RECORD WITH KAISER UNITAB* KILN LINERS

"No. 1 Kiln: 317 days on Kaiser lining, going strong."

"No. 2 Kiln: 584 days on Kaiser lining, no hot spots."

Reports like this consistently show greatly improved—or "record"—hot zone service. There are two simple reasons why:

1. Kaiser Periclase Chrome brick are used in Kaiser Unitab Kiln Liners. This brick is designed—and proved in years of kiln service—to be dimensionally stable, and to give high resistance to spalling and to chemical attack by hot clinker.

2. Bonded shims and spacers, a development pioneered by Kaiser Refractories†, assure correct liner placement and speed installation as much as 50%. Cardboard spacers automatically provide for longitudinal expansion; shim bonding adhesive automatically provides for circumferential expansion.

In addition, the overlapping shim melts during production start-up and welds clinker particles to the hot face. This quickly produces a tenacious coating that resists separation even through repeated shutdowns. Think of what this means in greater production and reduced down-time!

If you are not already using Kaiser Unitab Kiln Liners, let your Kaiser Refractories Sales Engineer show you how they can help you reduce kiln down-time and get increased liner service. And ask to see the 30-minute color movie, "Progress in Modern Basic Refractories."

Call or write Kaiser Chemicals Division, Dept. C9532, Kaiser Aluminum & Chemical Sales, Inc., at any of the Regional Offices listed below:

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NOW...a year later...same still leads in availability ...with 96.1% working record

—for Southern California Edison Co., Los Angeles, Calif.

A year later, in 1959, still meeting and beating machine-mauling High Sierra rock-hauling conditions—on Mammoth Pool Hydroelectric Project, for Southern California Edison—the same 10-unit International 95 Payhauler fleet is still turning in this excellent record of availability.

With 2,500 to 2,700 working hours clocked on each unit of the fleet, the 10 Payhaulers delivered 96.1 availability in a recent measured month. The Payhauler fleet never lost a day due to mechanical failure! Performance like this has helped advance job-completion date substantially ahead of schedule!

Southern California Edison Company credits their excellent results partly to strong-built, easy-to-maintain machines—partly to a methodical preventive maintenance program. Working view shows two Payhauler units highballing rock fill to the dam site in 1959—maintaining record high availability!

...NEW corrugated-body Payhauler models

New "95" Payhauler gains 3 tons in capacity, plus an additional 40 diesel hp.—with new corrugated body design and new 375-hp. turbocharged International DT-817 diesel engine.

See those exclusive, rock-ribbed body corrugations! International applies this exclusive strength-multiplying principle to reduce the body-weight of new Payhauler models with these results:

- **New "95" Payhauler loses 2½ tons of power-wasting dead-weight; gives 3 extra tons of payload capacity!**
- **New "65" Payhauler sheds 5,000 pounds of useless "ballast"; gains a whole ton of new hauling capacity!**

And both these weight-streamlined Payhaulers have new International diesel power to highball the bigger payloads 14% faster than the previous models. These new Payhauler models have the power-to-weight ratio to out-cycle even lower capacity rigs.

Get the proof that new Payhauler models can deliver and keep delivering you the lowest material-moving costs in the off-highway hauling market. See your International Construction Equipment Distributor for a demonstration!

"95" Payhauler® fleet

speed bigger loads...up to 14% faster!

New "65" Payhauler, the only 19-tonner, features International's *exclusive* new corrugated body principle. Powered by the naturally aspirated new 250-hp. International D-817 diesel engine.

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International Harvester Co.
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A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom-Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

"Our blasting days are over

. . . with the TD-24"

—Wrightwood White Rock Co.,

Wrightwood, California

"With the International TD-24 our need for explosives to shatter rock is eliminated," declares Owner Dale Douce, Wrightwood White Rock Co. "The '24' can do a better job than dynamite at a fraction of the cost."

The TD-24 removes a 40-foot overburden from the 1,000-foot-thick deposit—rips the rock into fragments, dozes it down to the loading level.

It's typical of the tough rock jobs which so many miners and quarrymen are doing to best advantage with Planet Power-steered TD-24's—against any other method or machine!

How TD-24's double for dynamite Sometimes it even takes two king-sized, clutch-steered crawlers to equal one Planet Power-steered TD-24 on rough, tough rock-moving. Exclusive, years-proved Planet Power steering gives your operator full-time "live" power on both TD-24 tracks—full-time separate and positive control of each track! And full-time, on-the-go Hi-Lo (up or down!) power-shifting.

Load-limiting and load-spilling "dead-track drag" is eliminated, because Planet Power steering keeps the full payload on the move even on turns. Gives bonus-load follow-through when ripping or dozing rock. Equalizes track speed for full-bite benching!

Prove the amazing production increase Planet Power-steered TD-24's can give and keep giving you—"blasting" through rock or other tough materials—or on everyday overburden removal. Compare TD-24 undercarriage strength—long, heavy-duty track-roller life and maintenance ease—precision sealing of parts—to anything else on tracks! See your International Construction Equipment Distributor for a demonstration!

"I always feel confident in the big TD-24, even working on the edge of benches with a sheer 100-foot drop," reports Operator Lloyd Medlock. "Positive steering control, good brakes and excellent balance make the TD-24 a *safe* tractor even in hazardous work like ours."

This quarry produces an exceptionally white, high-calcium (98%) limestone—widely used for roof-covering in the Los Angeles area; also by glass and chemical manufacturers. Note the rock-shattering job being done by the TD-24-powered Ateco ripper!

International® Construction Equipment

International Harvester Co., 180 North Michigan Avenue

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom-Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

New 45 hp low-

Leads the small crawler field in

POWER • SPEEDS • STEERING • EQUIPMENT

New IH hydraulic bull-grader—angled, tilted, lifted, and lowered hydraulically from the tractor seat.

Job-proved, high-torque, valve-in-head engine develops 45 maximum flywheel horsepower . . . 31 drawbar horsepower. Job-proved fuel economy.

5 speeds forward, one reverse, with regular transmission.

5 speeds reverse . . . 5 speeds forward with Fast Reverser for faster cycles on shuttle-type work. Go *22½ per cent faster* in reverse than in corresponding forward gear. Or . . .

10 speeds forward with exclusive IH Torque Amplifier drive. Boost pull- or-push-power on-the-go in any gear without shifting.

Planetary steering allows for feathered or pivot turns with minimum physical effort. Simple, rugged design simplifies maintenance.

Exclusive, advanced hydraulics deliver 12 or 17 gpm from constant-running, *internal-mounted* pump. Controls heavy duty loaders and a wide range of hydraulically-controlled front-mounted, rear-mounted, or trailing equipment.

Husky track frames, shoes, links, rollers, pins, and bushings assure long track life.

New International Drott T-340 Four-In-One Skid-Shovel—combines in one machine a bulldozer, clamshell, carry-type scraper, and ¾ cu yd bucket (⅞ cu yd heaped), all hydraulically controlled.

New International Wagner backhoe and loader—can be mounted separately or in combination. Self-leveling loader has 3,500-lb capacity.

International® T-340 . . .

cost utility power

with crawler traction

Here's power and performance entirely new to the utility crawler field! It's the new International T-340 with power, speeds, job range, and handling ease entirely new to small crawler operation. You now can profit from crawler pull-power and flotation . . . with proven IH stamina and dependability . . . scaled in cost to the multitude of jobs where you can't afford to tie up bigger, more costly equipment. With such job-matching options as Torque Amplifier, Fast Reverser, and big-capacity internal hydraulic system, coupled with new planetary-type steering, the new T-340 offers production-boosting features not even available in many larger crawlers!

Try it . . . test it! Phone your nearby IH Dealer for a T-340 demonstration! For specification folder, write International Harvester Co., Dept. RP—7, P. O. Box 7333, Chicago 80, Illinois.

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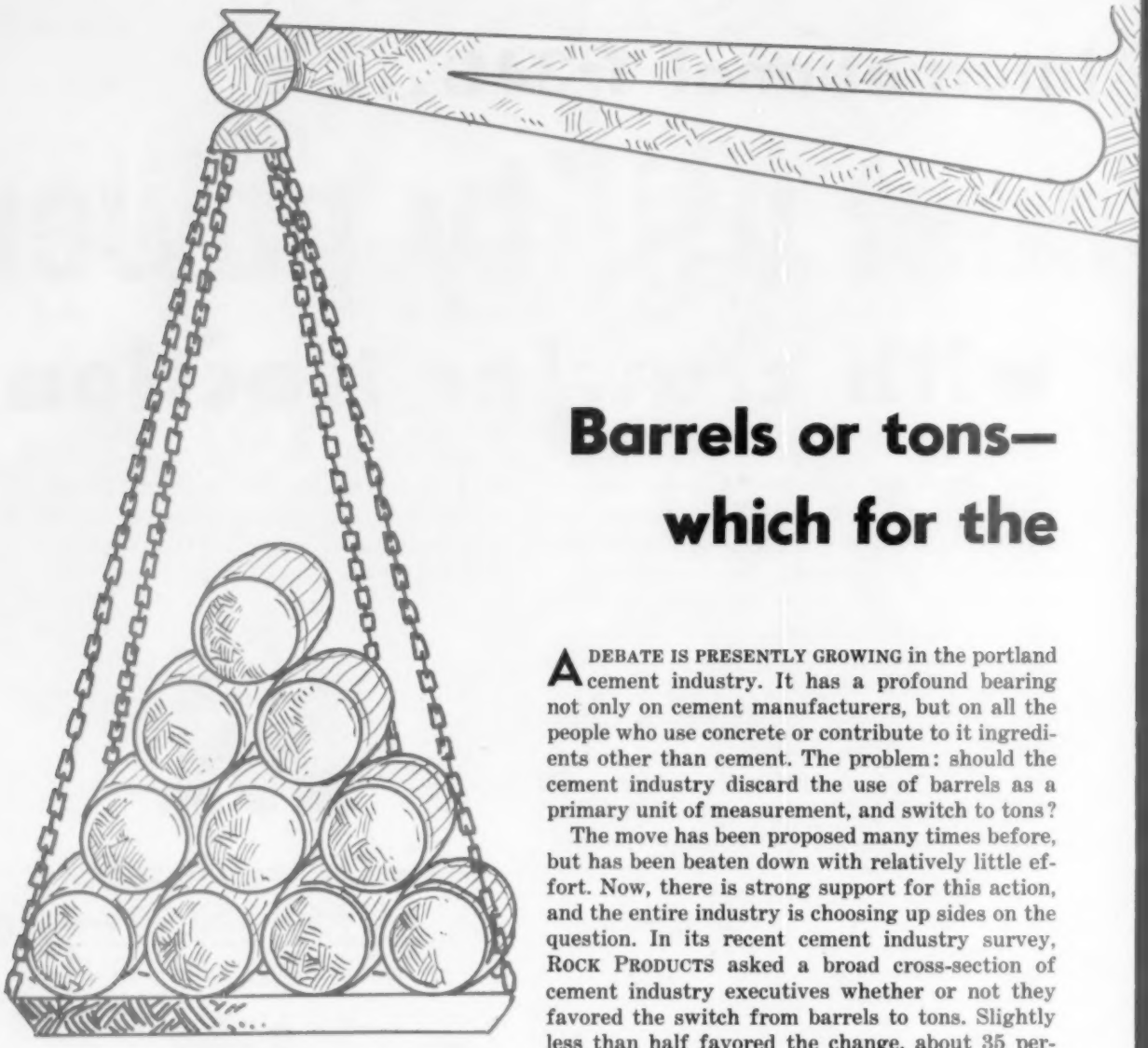


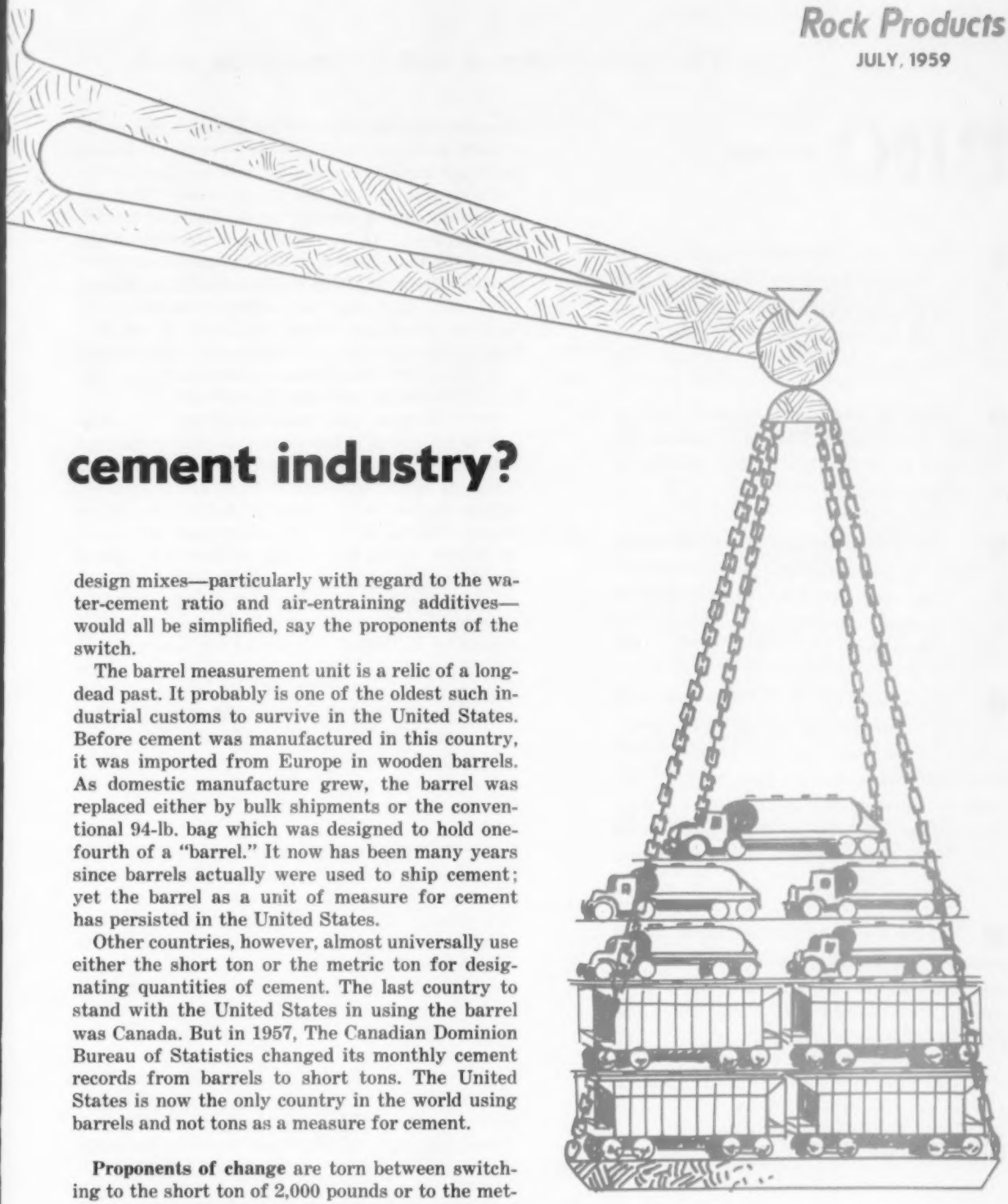
Barrels or tons—which for the

A DEBATE IS PRESENTLY GROWING in the portland cement industry. It has a profound bearing not only on cement manufacturers, but on all the people who use concrete or contribute to it ingredients other than cement. The problem: should the cement industry discard the use of barrels as a primary unit of measurement, and switch to tons?

The move has been proposed many times before, but has been beaten down with relatively little effort. Now, there is strong support for this action, and the entire industry is choosing up sides on the question. In its recent cement industry survey, ROCK PRODUCTS asked a broad cross-section of cement industry executives whether or not they favored the switch from barrels to tons. Slightly less than half favored the change, about 35 percent opposed it, and the remainder were undecided.

There is strong support for this action, and the entire industry is choosing up sides: slightly less than half favor the change, about 35 percent oppose it, and the remainder are undecided

Those advocating the change are vehement, while those opposed don't consider it important and can't understand what the fuss is all about. But the growth in demand for change has paralleled the increasing proportion of portland cement consumed by large users. Today, nearly three-fourths of all cement is used by very large consumers who operate their own mixing plants, precasting yards, block plants or highway construction equipment. People operating on this scale purchase their sand and gravel in tons, and batch their concrete mix by weight. Thus, they presently have to convert the cement they buy into tons in order to work with it. It would mean a considerable simplification to them if the cement were delivered and billed in tons. Calculation of concrete—



cement industry?

design mixes—particularly with regard to the water-cement ratio and air-entraining additives—would all be simplified, say the proponents of the switch.

The barrel measurement unit is a relic of a long-dead past. It probably is one of the oldest such industrial customs to survive in the United States. Before cement was manufactured in this country, it was imported from Europe in wooden barrels. As domestic manufacture grew, the barrel was replaced either by bulk shipments or the conventional 94-lb. bag which was designed to hold one-fourth of a "barrel." It now has been many years since barrels actually were used to ship cement; yet the barrel as a unit of measure for cement has persisted in the United States.

Other countries, however, almost universally use either the short ton or the metric ton for designating quantities of cement. The last country to stand with the United States in using the barrel was Canada. But in 1957, The Canadian Dominion Bureau of Statistics changed its monthly cement records from barrels to short tons. The United States is now the only country in the world using barrels and not tons as a measure for cement.

Proponents of change are torn between switching to the short ton of 2,000 pounds or to the metric ton. The advantages of the latter in technical and scientific calculations are manifold. But because most basic industries in the United States and Canada use the short ton, there would be many complications if the cement industry were to lead the way in adopting the metric system.

by Joseph N. Bell

The lines are drawn, and the arguments are likely

PRO—

● *"We'd like to see this change mainly because freight rates are computed per cwt. and the ton unit would simplify shipping problems considerably. But we don't look for it to occur soon."*

● *"There is absolutely no justification for the barrel unit. The only reason it's still with us is because of the inertia in the cement industry."*

● *"Tons would definitely provide a better unit of measurement, particularly in the pricing structure and in competing in international markets where all measurements are in tons."*

● *"The use of the barrel is a sad commentary on archaic thinking in our business. Certainly the change would create some problems—but it's long overdue. We seem to have gotten to the place where we'd rather just disregard the need to apply a little mental power and go off and play golf somewhere."*

● *"There are many advantages to the change to tons. The cement industry has continued to live with an outmoded system which was created for different times and far different price structures."*

Barrels or tons? *continued . . .*

Therefore, most of those advocating change are attempting to rally round the banner of the 2,000-lb. short ton.

Under that system, a bag of cement would be exactly one-twentieth of a ton, or 100 lb.; the present bags would have to be manufactured 6.4 percent larger in volume. Bulk cement users—who already measure their cement by weight—would no longer have to convert to-and-from barrels.

Those who oppose the change—and there are many—do do unabashedly on the basis of historical precedent. Few opponents deny the logic of the switch to tons; but many deny the practicality. The argument seems to hinge on just how difficult it would be to change the residue of almost a century of calculating portland cement in barrels. Those who favor the change say it wouldn't be difficult at all; those who oppose it say that the difficulties would outweigh the advantage.

They point out that there would be a big problem of educating users to re-evaluate the design of concrete mixes, involving wholesale changes in technical data sheets and literature. To get comparable figures with previous years, tabulations would either have to be converted back to barrels, or records would have to be converted to tons—which would involve much paper work.

Opponents also say that the change would be hard on the small user of cement, who purchases cement in bags and proportions his concrete mix by volume. That type of customer would either have to change all of his design ratios or would use about 6 percent more cement than before. That plan probably would produce better concrete and be a happy circumstance for the cement industry, but it might prove painful in the pocketbook for the cement user.

Here are the principal advantages put forth by the growing number of cement industry people who favor the change from barrels to tons:

1. Quarrying, transportation of raw materials, crushing and grinding are now calculated in tons.

2. It would be a decided simplification to calculate proportioning of the mix, production bases on mix consumption, fuel, labor, overhead, maintenance, depreciation, taxes and similar statistical necessities on a uniform tonnage basis.

3. It would be much easier to compare American cement industry technical data with other industries or with cement statistics in other nations if American data were expressed in tons. The measurement is almost universally used elsewhere.

4. Use of the ton measurement would eliminate confusion over the three different meanings for the barrel in many cement plants. Barrel is not only used to refer to 376 lb. of finished cement, but is also frequently used to designate the amount of clinker needed to make this cement (about 360 lb.) and the amount of raw mix re-

to become more heated before a solution is reached

quired for a barrel of cement (about 640 lb.). Use of tons would eliminate confusion and misunderstanding, for a ton in each instance would simply mean 2,000 lb.

5. Bulk cement shipments are already measured in tons. Adoption of the ton by the cement industry would eliminate the awkward calculation of barrels to tons and back to barrels necessary in shipping bulk cement.

6. Adoption of the ton would save countless hours—both among cement manufacturers and users—in technical and scientific calculations.

One of the most outspoken proponents of the change summed up his case this way: "If we were just beginning the cement industry, we wouldn't even consider adopting a unit of 376 lb. or any other odd number. We obviously would use tons. Therefore, only the weight of history is behind this practice—and we haven't let history stop us from some exciting modernizing of the cement industry in the last few years. Switching to tons is one easy way we can modernize with direct, tangible benefits both to ourselves and the public. There simply is no place in the modern cement industry for such an archaic practice as the use of barrels as a unit of measurement."

To which opponents nod their heads and admit the logic while they say: "But we just can't think of cement in tons."

A considerable number of rock industry people are still neutral on the subject—or favor some other solution than the switch to tons. Some of the spokesmen of this point of view had these comments:

"We don't feel too strongly about the change either way. It probably would be better for everyone involved to change to the metric system, but we don't think it will ever come about."

"We favor the switch to pounds rather than tons. We've lived with the barrel so long that we would prefer to continue with a 94-lb. bag; if we used tons, we would have to switch to a 100-lb. bag. It isn't a simple problem."

"Frankly, we don't care. Certainly the barrel is archaic, but we're so accustomed to using it that it presents us with no particular problem — although we use millions of pounds for our production cost records."

The lines are drawn, and the arguments are likely to become more heated before a solution is reached. But this time the proponents of change have given notice that they don't intend to give up as easily as they have before. **END**

—CON

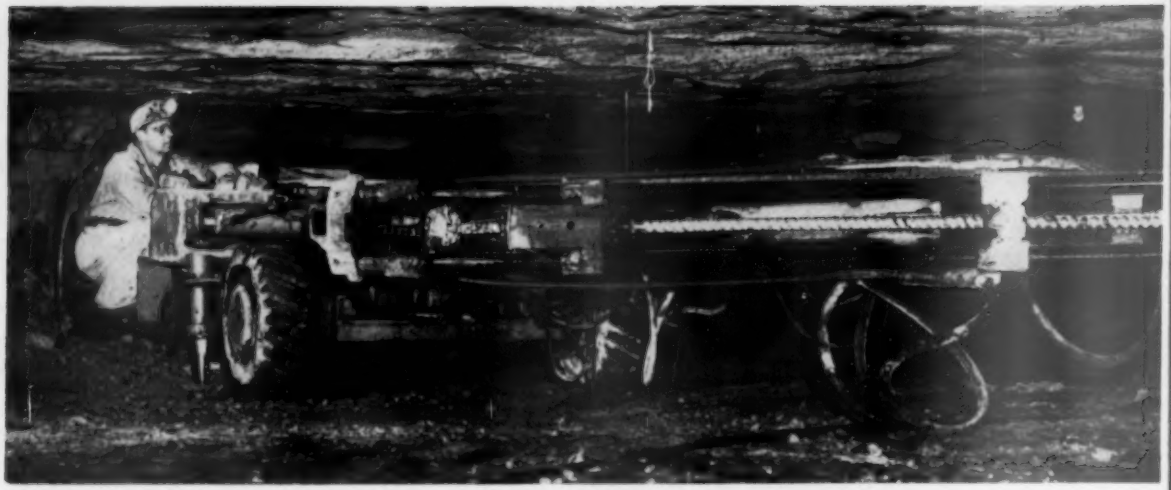
- *"After all these years of using barrels as a unit of measurement, neither the people who make cement nor the people who use it can think in tons. I don't believe the advantages of the change would compensate for the problems it would cause."*

- *"It would be a monstrous task to change to tons. All you have to do is consider how many man-hours it would take to make the conversion in design literature alone in relation to the relatively small advantages to be gained, to realize how senseless it would be."*

- *"We don't favor the switch. We think the proper dignity between cement and aggregate should be preserved, and the change of measurement units would be destructive. Concrete mixes are not based upon tons."*

- *"All of our design theory and construction equipment is geared to the barrel. We would have to throw out and then re-assess so many forward steps we have taken in these areas that the effort hardly seems worth the advantages."*

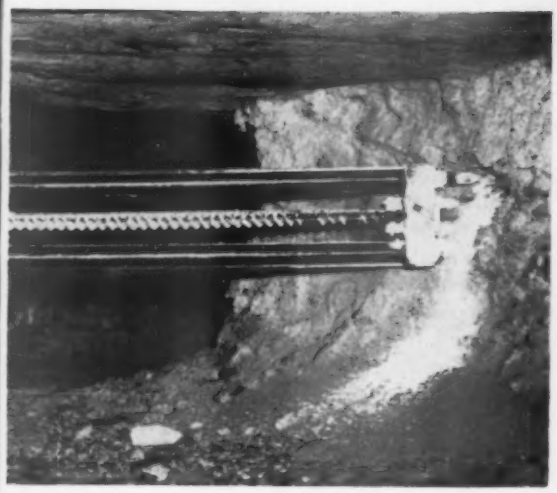
- *"We see absolutely no point in changing. The ripples caused by such a change would spread much farther than any of us realize. It would mean changing everything with which we do business—from measuring devices, to literature, to laboratory control factors."*



With this electrically powered machine, an operator drills a 12-ft. blast hole in 3 minutes

A mechanical loader in operation. Arms of the machine pull rock onto a conveyor that dumps the load into a shuttle car at rear. The machine can move several tons of gypsum into a car in 2 minutes

A load of gypsum is discharged into a line of waiting cars. Shuttle cars haul gypsum from working areas to the loading point. Each car holds six tons



by Robert G. Dyment

Typical of National Gypsum's modern mining operations is their mine located near Clarence Center, New York

Underground mining "goes modern"

WITH MINES AND QUARRIES SCATTERED throughout the United States and Canada, National Gypsum Co. uses only the most modern mining methods. Typical of National Gypsum mining operations is the mine located two miles east of Clarence Center, N.Y., near the company's Buffalo headquarters.

National Gypsum competes in nine industries. Annual sales in 1958 alone exceeded $151 million. The company has 8,000 employes, 24,000 stockholders. About 21,000 dealers buy the more than 250 products carrying National Gypsum's "Gold Bond" trademark. The company has invested more than $136 million in new plants since 1945 and manufactured a record 20 new products during the second half of 1958.

This product diversification is motivated by National Gypsum's belief that architects, builders and home owners can benefit from a broad line of related building products—all made by one concern under one trade name, all made to work with each other. Company management reasoned that with all products sold under the same Gold Bond name, one quality product could gain acceptance for another. The name could become a recognized symbol of quality. This was the Gold Bond idea.

The company saw additional advantages in product diversification. A line of products sold together would offer assurance to home owners, since the responsibility for the performance of the products would rest with a single manufacturer.

In 1953, the company's paint line was greatly expanded by the purchase of Wesco Waterpaints, Inc. This move added paint-manufacturing facilities in the East, Midwest, South and in Canada. These facilities included equipment for the production of the new latex-base paints, which were rapidly becoming very popular with the booming do-it-yourself market.

One of the most significant gypsum finds of this generation occurred in July, 1953, when National Gypsum geologists confirmed their discovery near Halifax, Nova Scotia, of probably the largest and richest deposit in North America. Two years later, after an extensive development program, the company began quarry operations at this gargantuan deposit, which contains enough of the mineral to keep National Gypsum's seven Atlantic seaboard plants producing at top speed for the next two hundred years.

Asbestos is another basic raw material in the company's industrial empire. It feeds three National Gypsum plants that make asbestos-cement siding and roofing shingles, wallboard and corrugated panels at New Orleans, La., St. Louis, Mo., and Millington, N.J. New economic reserves of asbestos, like gypsum, are scarce. But the company acquired a deposit with long-life reserves near Thetford Mines, Quebec, and developed a new multimillion-dollar quarry and fiber-processing plant that went into production in mid-1958. In the spring, a major new gypsum quarry in Michigan began to ship ore to mills at Waukegan, Ill., and Lorain, Ohio.

Please turn to next page

Modern mining *continued . . .*

Operations began at the Clarence Center mine in 1926. Since that time, it is estimated that the mine has produced several million tons of gypsum. This gypsum has been manufactured into wallboard and other plaster products that have been used in over two million homes in the northeastern states.

Workers descend into the mine daily and are transported in specially built rail cars to their working places a mile from the entrance. The operation was converted to mechanized mining in 1946; it now utilizes roof bolting instead of timbering, mobile power drilling instead of stationary post-mounted drilling, mechanical loading instead of hand loading and shuttle-car haulage rather than truck haulage at working faces.

The bolting machine drills a hole into the limestone ceiling and then screws a bolt into the hole to bind together the ceiling's limestone strata. Hundreds of solid gypsum pillars give additional support.

The principal uses of explosives in the mining operation are for blasting rock out of the solid face and blasting roof for the main haulage ways. At the Clarence Center mine several blasts are set off simultaneously in one area. The rock is comparatively easy to drill and blast.

Blasting is done at the end of each shift; four hours elapse to permit smoke and dust to clear before the next production crew enters the work area. Part of the work crew loads ore, while the others drill into the walls and place dynamite charges for the next series of blasts.

Each blast topples tons of gypsum from the mine wall. The electrically powered drilling machine allows an operator to drill a 12-ft. deep blast hole in 3 min. Two track-mounted air compressors are used where percussion type drilling is found necessary.

Blasted rock is hauled by tractor-loaders to a mechanical loader that pulls rock onto a conveyor. The conveyor dumps the load into a waiting shuttle car. The loader can move several tons into a car in two minutes. The cars haul gypsum from working areas to the loading point. Each shuttle car holds approximately six tons.

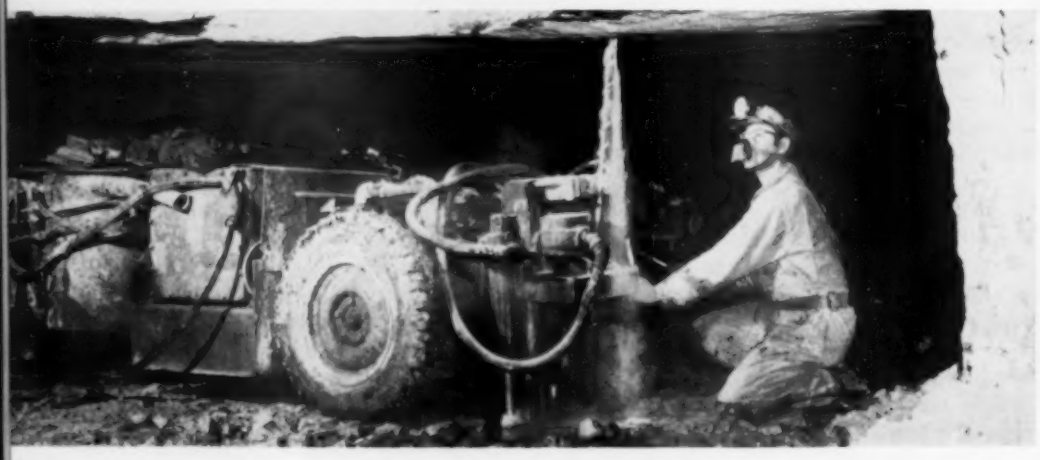
Rock is transported to the crusher in bottom-dump mine cars pulled by trolley-type locomotives. The material is crushed by a roll crusher.

Mine Superintendent Lloyd Lyles uses the mine phone in his underground office to check distant working sections. By means of the phone, all areas of the mine are kept in constant voice contact. The phone system uses the same electric cables that transmit power to the mine trains and other electrical equipment.

In order to eliminate water hazards, a powerful battery of electric pumps operates 24 hr. a day, 7 days a week. A ditching system coupled with the natural slope of the mine channels water seepage to the pumps.

Ventilation is a primary consideration in any mining operation. At the Clarence Center mine, workers construct a "brattice" wall to seal off any unused section of the mine. The wall helps channel fresh air into the work areas. A system of fans pumps air through the mine.

The mine and the processing plant on the surface were National Gypsum's first operations. Since this modest start, the company has grown into a far-flung industry with 38 plants in 26 states and Canada. The Clarence Center installation is one of 13 gypsum operations—including 7 mines and quarries—owned by National Gypsum Co. The company's other mines and quarries make use of the same up-to-date methods. END



Roof bolts take the place of wooden timbers at National Gypsum's Clarence Center mine. The bolting machine, shown here, drills a hole into the limestone ceiling and then screws a bolt into the hole to bind the ceiling's limestone strata together

Higher rail rates forced this Wisconsin agstone producer into business

by David O. Mocine

Over-all view of portable plant at Ronald Detjens limestone quarry

New business springs from rate hike

HIGHER RAIL RATES forced this Wisconsin producer into business. Ronald Detjens formerly only delivered and spread agricultural limestone in Marathon and Langlede Counties. Now he has opened a quarry, equipped it with a portable screening and crushing plant and nine spreader trucks. With his own source of supply, he is selling agstone with more profit than ever.

Located in east-central Wisconsin in the heart of a prosperous farming district, the Ronald Detjens limestone quarry is on the top of a glacially-formed hill overlooking Shawano Lake. Limestone at the quarry is under only two feet of overburden and is roughly 40 ft. in depth. This stone is easily fragmented by dynamite.

Agricultural limestone from this deposit tests from 85 to 90 percent neutralizing value. This percentage figure is based on the amount of calcium in the stone, and rates high for a pit-run agstone.

Blasting at this quarry is under contract to a dynamite expert who takes charge of all drill patterns, drilling and the actual formulation of dynamite. One blast in late summer provides enough stone to operate the plant through the winter. The present quarry operation has produced over 32,000 tons of minus ⅛-in. agstone, all put through the portable plant.

Ronald Detjens, owner of the quarry, has been engaged in the limestone business since 1948. The major share of his work has been in connection with delivering and spreading agricultural limestone. Prior to opening the present quarry, the agstone was purchased in bulk and delivered by rail. Mr. Detjens said his reason for opening the present quarry was the increase in rail rates.

Spreader trucks operate in an area at the center of which is the quarry. In addition to pit-run agstone, the Detjens operation handles 30,000 to 40,000 cu. yd. of lime sludge from a local paper mill. This waste product from the mill is stockpiled and air-dried so that it may be handled by the spreader trucks. Lime sludge from the paper mill is mostly minus 200 mesh.

Principal unit around which this quarry operation is built is a new portable crushing and screening plant. This unit, powered by a 350-hp. diesel, is rated at 50 tph. capacity of minus ⅛-in. stone. The portable plant used in the Detjens quarry was custom built to the owner's specifications. This plant differs from stock portable plants in that its primary product is agricultural limestone.

In the words of Mr. Detjens: "The portable plant

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One of the newest installations is at the plant of C. A. Cemento Carabobo Sucra, where four turbines are in operation

Gas turbines power Venezuelan cement plants

by Leo Walter

GAS TURBINE-DRIVEN GENERATORS are slowly finding their way into cement plants all over the globe. One of the newest installations is at the modern plant of C. A. Cemento Carabobo Sucra, near Valencia, Venezuela, where four turbines have been in operation since August, 1956.

Cemento Carabobo chose to generate its own electricity because of the mounting uncertainty of the local power supply. The post-war development of oil-rich Venezuela has proceeded at a pace matched by few other countries in the world, and this activity has placed a heavy demand upon the supply of electric power available to manufacturing plants.

The operation of the Valencia plant is continuous, although the power demand fluctuates widely. For instance, in daytime the quarry, crushers, mills and kilns are working, while during the night, only the mills and kilns are in service. On Sundays and holidays, the kilns alone are operating. For this reason, it was judged practicable and economical to use generating units of less than 1,000-kw. output each.

When inexpensive oil or natural gas is available as fuel, the cost of a gas-turbine power plant compares favorably with steam or diesel operation. Location in or near oilfields or natural gas sources is essential; this explains the geographical distribution of the plants now in operation in the cement industry.

Gas turbine-driven generators are also in use at the plant of Compania Venezolana de Cementos at Pertigalete, state of Anzoategui. There, four generators give a total output of 14,100 kilowatts. Since this is more than the plant requires at the present time, the surplus is sold to nearby towns. Natural gas from the oil fields to the south is piped in from 60 miles away and is used to power the gas turbines as well as for firing the kilns.

Here are some advantages of gas turbines:

—The gas turbine cycle uses very large gas volumes and small temperature and pressure drops compared with steam plant. In the simple open gas-turbine cycle, the combustion gases pass directly through the turbine; heat transfer is not necessary.

—The simple gas-turbine cycle needs no water, boiler or condenser. The whole turbine can be shipped fully assembled and requires only a very light foundation; this means a small outlay for the power-house.

—Maintenance and spare parts requirements are low, due to the absence of reciprocating parts. Operation is simple and can be carried out by unskilled personnel.

—There is little noise and no vibration, important considerations in a power-house located near a residential area.

The last of Cemento Carabobo's four gas turbines, complete with generator and switchgear, arrived at the plant July 12, 1956, and was installed and running 20 days later.

The power-house is a simple concrete building with an arched roof. In addition to housing the four alternator sets, it provides space for two more units to be installed when the peak power demand exceeds the maximum of 3,600 kw. now available. The station site is a quarter of a mile from the plant and upwind, to avoid excess filter loading with cement dust.

One of the four turbines is a dual-fuel unit arranged to operate on natural gas or, in the event of an emergency failure of gas supply, on distillate fuel oil. Otherwise, the four sets are identical. Each consists of a standard gas turbine of open-cycle design, coupled with a revolving-field, salient-pole alternator rated at 900 kw., 2,400 v., three-phase, 60 cycles. The alternators are driven at 1,500 rpm. through 4 to 1 ratio reduction epicyclic gears. Each alternator is mounted on a fabricated

This view of the Carabobo power house shows clearly the ground level accessibility to the air filters

Each alternator is mounted on a fabricated steel underbase as is its associated turbine, and the whole unit is supported on a simple concrete foundation

The Y piece on the exhaust ducts: one discharge leads into the concrete chimney, the other is available for heat recovery installation

steel underbase, as is its associated turbine, and the whole unit is supported by a simple concrete foundation.

An extremely neat and accessible arrangement has been achieved by the location of air-intake and exhaust-discharge ducts below turbine floor-level. A five-ton overhead crane spans the power-house and provides lifting capacity for the heaviest unit assembly. Small "davits" can be attached to the underbeds of each turbine for lifting individual sub-assemblies. This equipment is adequate for all normal servicing work, since no item in the gas turbine weighs more than 500 lb.

Air enters through the side of the building, just under the roof-edge, and passes through filter housings which are accessible by doors at outside ground-level. On the exhaust side, the building is open below turbine floor-level, to provide natural air circulation around the lagged exhaust ducts.

The power-house itself is well ventilated. The stepped arches of the roof construction provide large openings that, together with the outward-blowing oil cooler fans, give a high rate of air change and considerable air motion. The highest temperature recorded in the power-house was only 7 deg. F. above the outside shade temperature.

The exhaust gases are discharged through concrete chimneys, and expansion joints compensate for thermal changes in the dimensions of the ducting system.

The switchgear includes a control panel and an exciter cubicle for each set, as well as two main 600-amp. feeders. Phase protection and voltage control are provided by automatic rolling segment regulators. A swing-mounted synchronizing panel has been installed, and any of the four machines may be paralleled by remote control.

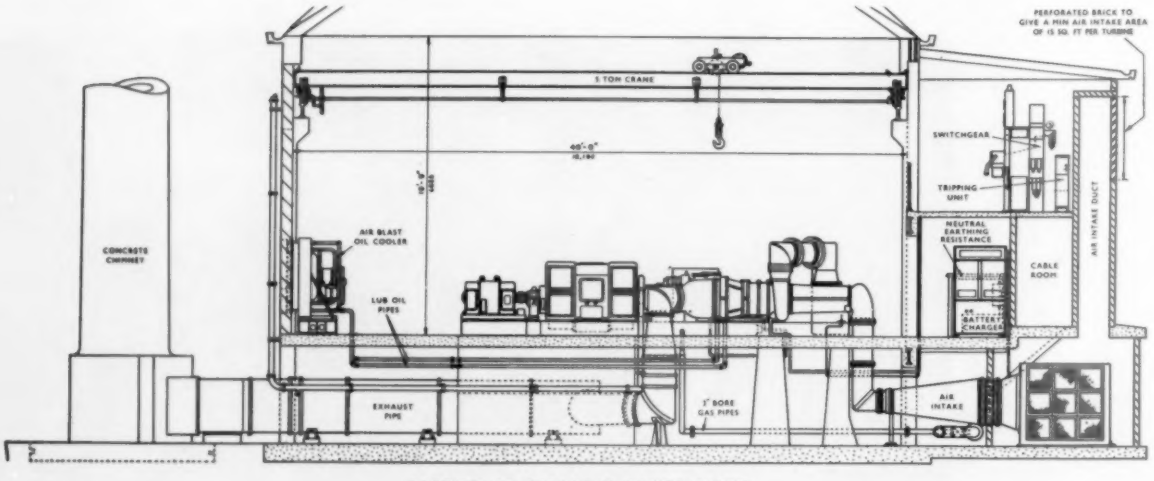
The main alternator circuit-breakers have a capacity of 400 amperes. A meter panel has also been installed with instruments to record total production and individual kwhr. per set. A station transformer of 50 kva. capacity is fed from the main busbars and provides three-phase power for auxiliary services—including the fans for the turbine-lubricating oil radiators—and single-phase current for lighting.

The gas supply is regulated from an incoming main pressure of 270 psi. down to 140 psi., at which it is distributed to the individual turbine control panels. Fluid separators insure that the gas is dry. The natural gas, which has a net calorific value of about 900 Btu. per cu. ft., is metered at delivery to each turbine.

In the first six months of operation, each machine ran for about 1,000 hours. To meet the power demand at that time, no more than two sets operated simultaneously. This state of affairs ended when the contract between the cement works and the electric company expired last year. The cost of the plant, including building and installation charges, was about $200 per kw.

While these turbines are operating on an open cycle, a possible extension of the plant at some future date may permit exhaust heat recovery. For this reason, the exhaust ducts are provided with Y-pieces at the point where they enter the chimneys.

The station is run by two operators per shift. This modern generating station is now in continuous service and has fully justified the choice of gas turbines as prime movers. **END**



SECTION OF CARABOBO POWER PLANT

AMC's special session for industrial minerals producers highlighted new, proved methods of slashing operating costs

Interest zooms in cost-cutting methods

THERE ARE NEWLY DEVELOPED METHODS of cutting your cost of operation in open-pit mines and plants. They've been proved to be effective through practical application to existing operations. Some of them were discussed fully at the May meeting of industrial minerals producers at the American Mining Congress Coal Convention held in Cleveland, Ohio. A huge equipment show, held in conjunction with the convention, included $7 million of mining equipment. Much of it was of the type used normally in the rock industries.

There's a good chance that you can cut your cost of blasting by using ammonium nitrate prills treated with fuel oil, even though you have wet holes. If you could use tractor-rippers to permit removal of material by either wheeled scrapers or bulldozers, you probably could reduce your mining cost. You can find out easily, now, whether this can be done or not, since there is available a simple, portable seismic unit to tell you what's under the surface.

Use of new, high-strength, tough, durable, constructional steels may save you money. They're said to be lighter in weight and carry lower fabrication costs, and may reduce maintenance because of their long lasting qualities. It will pay you to look at your haulage methods too, and the probable application of instrumentation and electrical controls to your operations. Experience shows that costs have been pared in these areas.

Each of these subjects was discussed from an actual installation standpoint, pointing out the cost advantages obtained.

Use of ammonium-nitrate prills in wet holes is not the obstacle to good blasting that it used to be. Many companies are experimenting with wet-hole applications with some success. A symposium on the subject revealed that several methods are now being used. Ammonium nitrate is used with regular explosives in waterproof cartridges in some cases. Or, AN in water-tight bags is used in others, depending upon water conditions in the hole. In one application, the operator blasted water from the hole first, before loading with AN and fuel oil. Normally, water depth in the holes varied from 1 to 14 ft., and regular explosive was used to remove it at the rate of one lb. of explosive to five feet of water.

In a third successful application, the operator found that he had two major problems with the use of AN as a blasting agent in wet holes: (1) provide a suitable container for the explosive to protect it from moisture, and (2) get a mixture of AN with the proper density to sink in water. A 10-oz. burlap bag with a polyethylene liner solved the first problem. Several trial mixtures of

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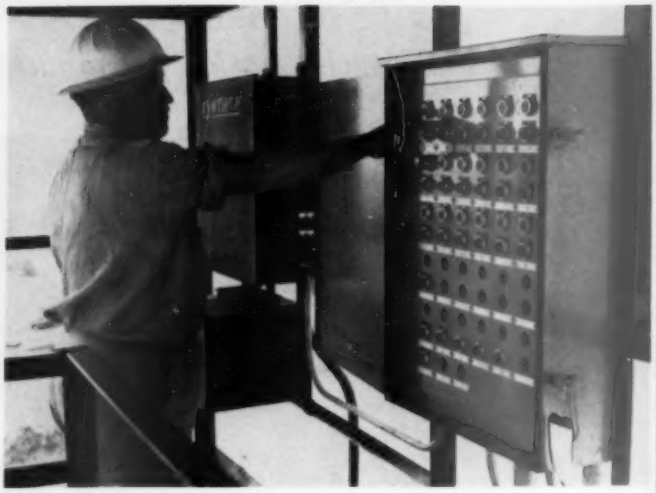
Recent advances in controls and power application for modern gravel-producing equipment now make it possible to get 15-20 percent more output per day



Here's a formula for more profits

*by William T. Hoch**

GRAVEL PLANT OWNERS now can get an extra 15 to 20 percent more production an hour from existing equipment. This can mean $50 to $150 extra profit each operating day. Extra production is achieved with existing equipment by simplified power application and by incorporating recent advances in controls.

The power plant in a portable unit must be particularly flexible, durable and economical. For this reason, the diesel engine has found almost universal acceptance as a prime mover. But power can be transmitted in one of two ways—mechanically or electrically.

A completely mechanical plant driven by diesel power is not flexible enough to get top production at all times. Clutches, belts, gear boxes and drive chains wear out and require constant maintenance.

Money can be saved in the long run with a completely electrified portable plant with its own remote-mounted diesel generator set. This is more expensive initially, and sometimes slightly higher to operate. However, more than a ton of cross shafts, jack shafts, bearings, pulleys, belts and gear boxes can be eliminated from the average portable plant. This weight reduction increases portability and greatly reduces maintenance. When the engine is remotely located, it can be placed where it is not subject to dust and vibration. The additional costs are almost insignificant when compared with the extra profit gained.

The most economical production unit is one which combines the best elements of both mechanical and electrical operation. In this arrangement, the larger units—the crushers—are direct driven by engines, while the feeders, screens and conveyors are handled electrically.

Semi-permanent gravel plants can use the same arrangement. A large Duluth producer originally operated its washing plant with three power units and one generator set. This arrangement was cumbersome and expensive. A single, large modern power unit with a direct driven, front-mounted 150-kw. generator replaced all four units.

In this application an 18 x 36-in. jaw crusher and a 24 x 42-in. roll crusher are driven by a flat belt from the power takeoff. The generator makes power for the electric motors and for lighting. By simplifying the power source, production was increased from 90 cu. yd. an hour to about 125 cu. yd. an hour.

Controls played a part here, too. A variable-speed motor on the conveyor bringing material to the plant assures that the crushers are operated

A clear view of the screens and crusher helps the operator control the equipment at top efficiency. A push-button control panel gives him complete control over the flow of material

*Manager, Engine Sales Div., Wm. H. Ziegler Co., Inc., Minneapolis, Minnesota.

Here's a formula for more profits *continued . . .*

close to their maximum capacity at all times. If the crushers seem to run empty, the belts can be speeded up to bring in more material. But if the crusher should become surged with recycled material, the flow of incoming material can be throttled back or stopped completely for a few minutes.

Many other similar applications can use diesel generators to good advantage. They have been used on dredges to drive suction and discharge pumps mechanically, with the generator making energy to drive hoists, winches and other similar equipment.

The size of the generator can be tailored to take care of the electrical load, while the power take-off at the other end of the diesel engine can handle a wide variety of heavy loads.

These ideas for increased production are not limited to portable plants. But here, control is most important.

Most gravel plant operators realize that screen capacity controls the output of the plant. Unless the specification deck of the screen is working to capacity, the plant owner is penalized; depreciation and labor to operate the equipment cost the same whether the screen is full or empty.

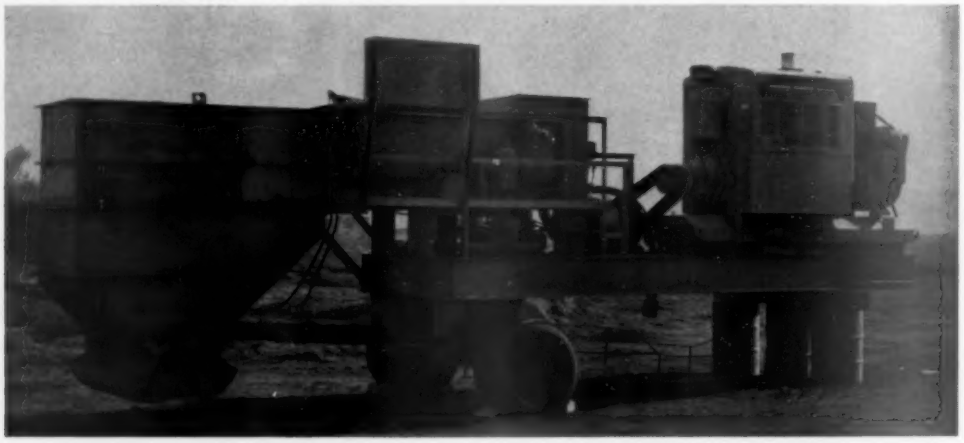
The ideal loading is the point at which one more pebble would overload the screen. This point may be impossible to achieve, but it is worth trying for. Gates or feeders under the surge piles should be checked regularly. Ordinarily, this is too much trouble for most operators who make a middle setting, sacrificing top production for convenience.

Controls can simplify this gate setting. With vibrating feeders it is possible to control the flow of material from the control tower where the operator can observe the amount of material on the belts and screens. Gates can be designed to operate with pneumatic or solenoid controls to regulate the flow almost as effectively as with feeders.

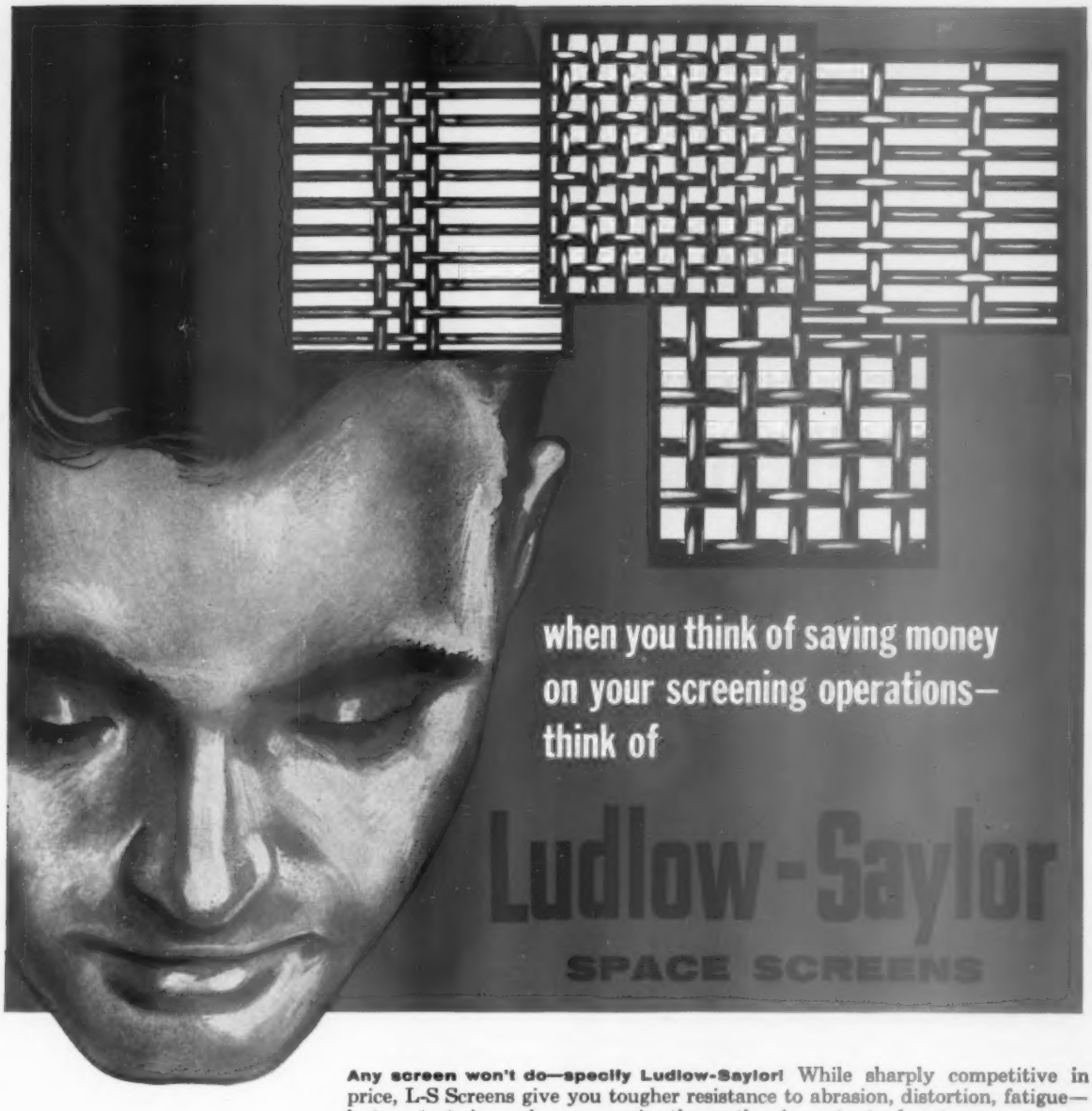
Next step in control of the flow of material is to put a variable speed motor on the reclaim belt conveyors from the surge piles to the screens. This is most effective when the reclaim gate must be operated manually. A single switch can change the motor speed—bringing material to the screens faster or cutting the flow of material to a trickle. This can and does result in increased production, often up to 20 percent.

Shipping efficiency can be improved with the application of pushbutton controls to shipping bins. The scale man or even the truck driver can operate the bin gates automatically. If the controls are interlocked with switches on the scale beam, overloading can be avoided. There is not much point to increasing production in the plant if the trucks are going to haul "free" overloads.

Controls can be applied to primary crusher feeders to great advantage. The cost of additional control equipment which keeps the crusher operating close to capacity is small when compared with the value of the additional output. It is possible to install overload controls which automatically reduce the speed of the feeder—or stop it completely. This is particularly valuable when there is a wide range of gravel sizes in the primary feed. When the oversize is running heavy, the crusher will work harder and may jam with too much oversize. Then the feed should be reduced. END



Portability is one of the greatest benefits of taking mechanical and electrical power off the same engine



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- step up feed and increase output compared to the sluggish movement of materials across improperly woven screens
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Revised markets compel change in plant flow

by R. H. Parsons and K. I. Johnson†*

Here's how one stone producer

HERE'S A CRUSHED-STONE PLANT that solved a two-pronged production problem quickly and economically. Aggregate Limestone Co., Inc., of Trussville, Ala., met new demands by simultaneously increasing total output and upping the proportion of fines. Down-time during the expansion totaled 12 days. Major equipment added: one crusher, three conveyor sections.

The problem arose early in 1957 when the company faced a trend in aggregate demand not anticipated when the plant was designed. The flow had been set up to produce 2½-in. top-size aggregate for uses like flux stone, concrete aggregate and road-base material. The market no longer emphasized the larger product; 90 percent of customer requests were for fractions between 1 in. and dust.

Production of the 1-in. x 0 fraction could not meet the demand. Stockpiles of plus 1-in. stone, on the other hand, became excessive—far surpassing orders. And, as 10 and 16-hr. operations became necessary to produce enough 1-in. x 0, stockpiles of larger stone mounted higher and higher!

Obviously, a change in the plant flow to meet this revised market situation was mandatory. But changing the flow entailed problems of its own. First of all, it was an economic necessity to use the equipment on existing foundations and to maintain the present conveyor systems—for two big reasons:

—lost production during an extended down-time.

—cost of relocating existing equipment.

Just as important was proper selection of necessary new equipment. The individual machine had to be right for its job, and over-all plant balance had to be maintained.

A market study of types and tonnages indicated that demand exceeded existing capacity. As long as new capacity was to be added, it was to the company's advantage to incorporate these desirable

*Vice President, Aggregate Limestone Co., Inc., Trussville, Ala.
†Birmingham District Office, Allis-Chalmers Mfg. Co., Birmingham, Ala.

Primary crusher product is scalped on double-deck screen, right, with oversize from both decks conveyed to secondary cone crusher. Secondary crusher product is carried to belt feeding secondary screen suspended in rear tower; oversize from this screen is recycled through third-stage crusher

changed his equipment to make more saleable products

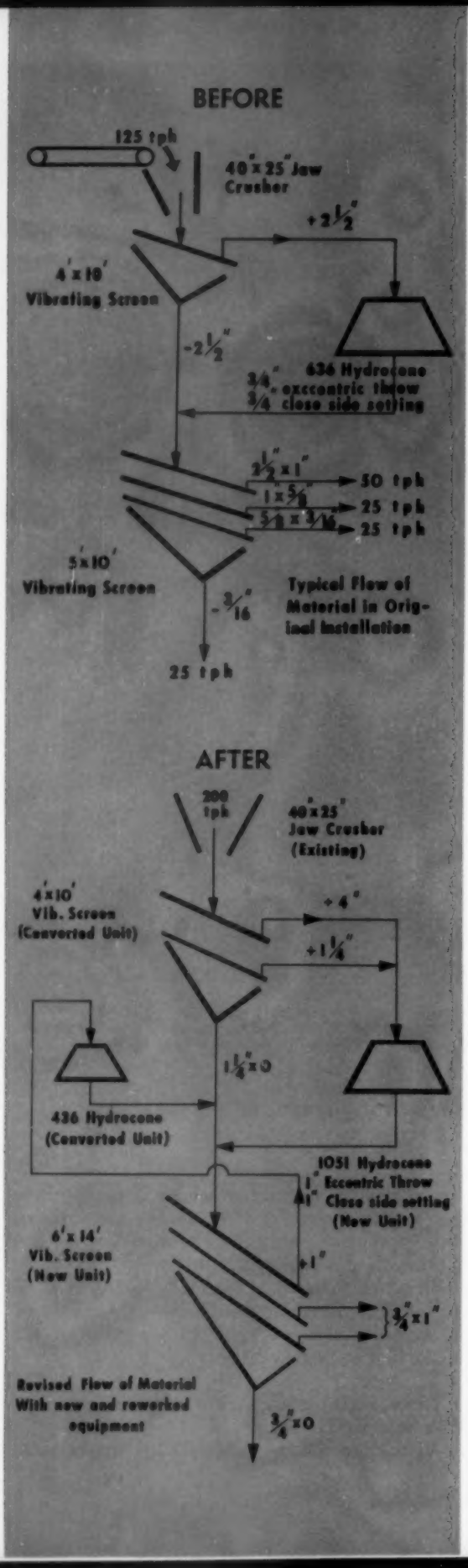
plant characteristics into the new design: adequate machine capacity; reasonable production of fines; controllable product size distribution; proper maintenance arrangements.

To help meet these needs, a 51-in. cone crusher was selected as a secondary crusher, following the 40 x 25-in. jaw crusher. Investigation of the scalping screen showed that it could be converted from a single to a double-deck unit by adding a screen support frame below the mechanism housing. Similarly, the 36-in. cone crusher previously used for secondary crushing, which had a coarse chamber, could be converted for third-stage crushing duty by replacing the coarse concave ring with an intermediate concave ring.

These changes could be made by regular employes under direction of the manufacturer's service engineer who was there to supervise erection of the new secondary crusher.

Three conveyor sections were planned to complete this new layout.

As the new plant neared reality, attention fo-



Plant flow *continued . . .*

cused on scheduling. Foundation for the new secondary crusher was started about 10 days ahead of the date selected for mounting the bottom shell. Meanwhile, the conveyor structures were fabricated at the plant site.

Plant operation stopped when the new crusher was ready for erection, with all operating personnel put into service in addition to the outside skilled welders. Erection of conveyor structures and crusher progressed simultaneously, while conversion of the scalping screen took place after the secondary crusher was completely erected and the smaller crusher fully converted. In all cases, machinery erection and conversion were supervised by the manufacturer's field service engineer.

The results of this modest investment have far exceeded expectations. Capacities now obtainable at Aggregate Limestone amount to better than 200 tph. of 1-in. x 0 products, and considerably higher production is possible when the plant is making a wider size range.

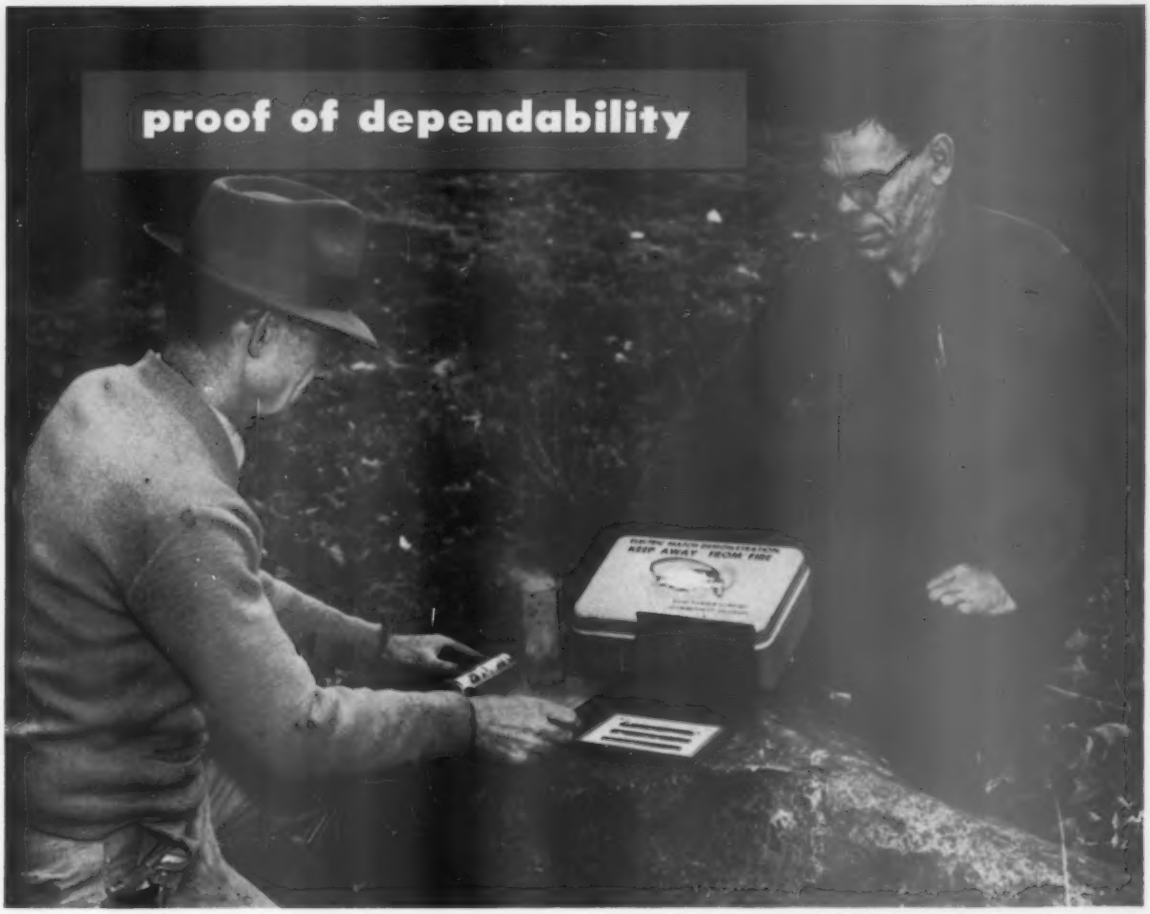
As is true of many crushing plants, actual operation showed that minor refinements could be made. For example, earlier suspicions that the 5 x 10-ft. triple-deck vibrating screen would be inefficient were fully confirmed, and it was replaced by a new 6 x 14-ft. triple-deck unit.

Also apparent was the need for a surge pile between the jaw crusher and the rest of the plant, as surges of 100 percent were noted in the plus 1-in. stone return belt to the 36-in. cone crusher. Sieve analysis of these returns showed 25-50 percent minus 1-in. stone. To eliminate the effect of surges on this third-stage crusher, an additional spout was arranged to divert part of the return stone to the belt feeding the secondary crusher, which was a satisfactory procedure from a crusher standpoint because of the 1-in. close side setting used in the secondary unit.

The company was fortunate that the original straight-line open circuit was adaptable to the modifications introduced during the expansion. Flexibility of both equipment and plant personnel helped keep time requirements to a minimum. **END**

MAJOR EQUIPMENT REFERENCE

Primary crusher, 40 x 25-in. jaw	Iowa Mfg. Co.
Secondary crushers	
—1051 Hydrocone	
—436 Hydrocone	Allis-Chalmers Mfg. Co.
Vibrating screen, 6 x 14-ft. Ripl-Flo	
Vibrating screen, 4 x 10-ft. Ripl-Flo	
Belt conveyors	



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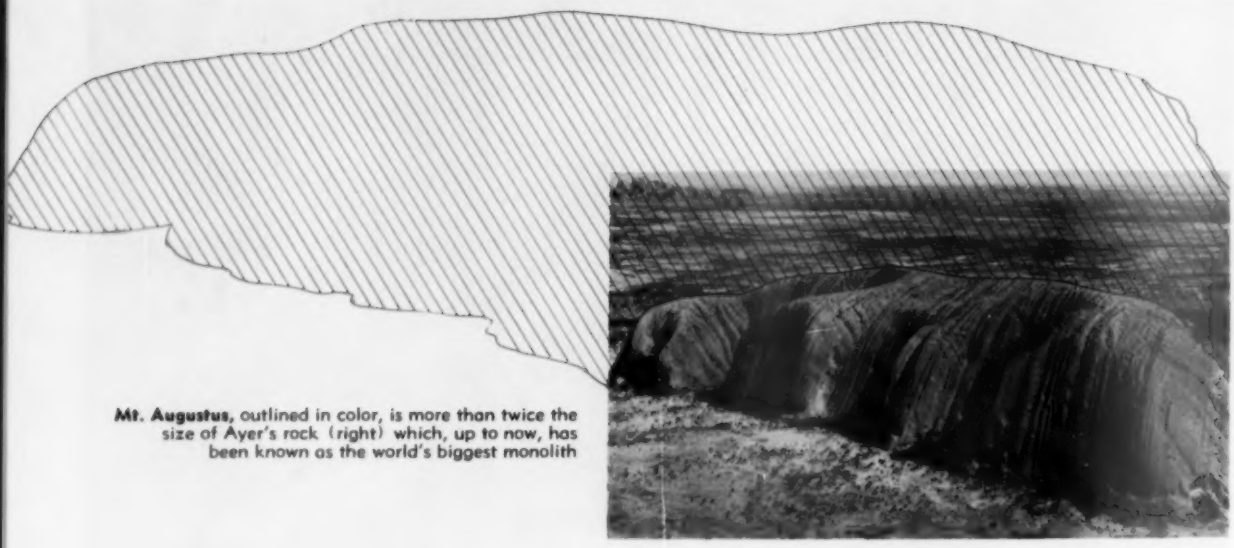

Mt. Augustus, outlined in color, is more than twice the size of Ayer's rock (right) which, up to now, has been known as the world's biggest monolith

"Biggest rock" is bigger than Ayer's rock

by Arthur Scholes

GEOLOGISTS IN WESTERN AUSTRALIA claim that their state has the biggest rock in the world. It is several times bigger than Ayer's Rock in Australia's Northern Territory which, up to now, has been known as the world's biggest monolith.

Ayer's Rock is 250 miles southwest of Alice Springs, and is one of the tourist attractions of the Central Australian desert. It is located in the uninhabited outback that stretches for 2,000 miles across the middle of this continent.

Ayer's Rock is 5 miles around and 1,100 ft. high. It is a huge stone, so big it would dwarf the Empire State Building, the Sydney Harbor Bridge in Sydney, Australia, and the Pyramids if they could all be placed together.

But West Australia geologists claim that Ayer's Rock is much smaller than a rock formation known as Mt. Augustus, which is situated some 200 miles northeast of Carnarvon.

This mountain (or rock) attains a height of about 4,000 ft. above sea level, and consists of a huge block about 5 miles long from southeast to northwest and about 2 miles wide.

It is a gritty conglomerate towering hundreds of feet above the surrounding plateau. In structure it is an unsymmetrical anticline, the axis of which strikes northeast and southwest.

Its northern limb dips northwest at about 40 deg. and its southern one southeast at about 25 to 30 deg.

The outline of the hill corresponds with its structure, the gentler southerly dip producing a long slope, and the steep northerly dip a tendency to scarps.

Geologists, working on these particulars, say the mountain rock appears to be either a gigantic monadnock or an up-faulted monoclinal block. The latter seems to be more probable.

The West Australian Government Geologist pointed out that Ayer's Rock is situated in a very prominent mass surrounded by flat to gently undulating country for hundreds of miles to the north, west and east. This aspect makes it look extremely impressive.

Mt. Augustus is not situated in the same type of terrain as is Ayer's Rock and is, consequently, less striking than the latter from a tourist's point of view.

Ayer's Rock, however, has become famous as a tourist center in the desert. Unfortunately, the rock itself has become in places an unsightly mass of initials, names and crude drawings.

Irreplaceable cave paintings, many of them the work of primitives from a lost generation, were

Please turn to page 121

KENNEDY JAW CRUSHERS

The KENNEDY Overhead Eccentric Jaw Crusher features a massive, one-piece, arc welded steel plate frame, and is available in standard sizes from 10″ x 36″ to 36″ x 42″.

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National Gypsum Co. jumps into asbestos production

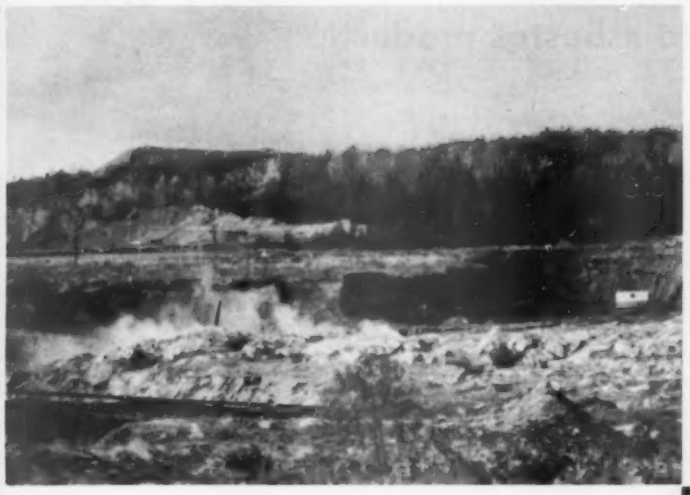
An intensive search by geologists and mining engineers yielded a rich find of asbestos ore on a 600-acre tract just east of Thetford Mines, Quebec

FORCED BY THE URGENT NEED for raw materials, National Gypsum Co. entered asbestos production. The rapidly expanding business of three asbestos-cement product plants set in motion an exploration program to find a source for asbestos, their primary raw material. An intensive search by geologists and mining engineers yielded a rich find of asbestos ore on a 600-acre tract just east of the town of Thetford Mines, Quebec.

A 3,000 tpd. asbestos ore processing mill was erected by National Asbestos Mines Ltd., a subsidiary company. In spite of heavy rains, deep snow and intense cold, the mill was completed in June, 1958, on schedule and in record time. First shipments to National Gypsum's production plants in New Orleans, St. Louis and Millington, N.J., were a pleasant surprise: The deposit was producing finished asbestos with more of the valuable long fibers than the original core drilling program had indicated.

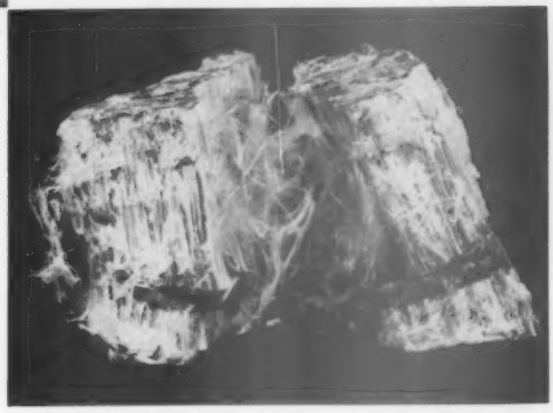
Various grades will be produced, including Group 3, long, spinning fiber; Group 4, shingle fiber; and Groups 6 and 7, shorts. Capacity at the new mill will be about 50,000 tons a year of these asbestos fibers.

The orebody at National's new mine is about 800 ft. wide and about 1,900 ft. long. The asbestos-bearing Pennington Dike is inclined about 45 deg. from the horizontal with a thick, slate-banded quartzite hanging wall. Open-pit mining will continue for approximately 40 years, but eventually the economics of removing the huge volume of hanging wall rock will lead to conversion to an underground operation.



by Elwood Meschter

Mill and mine of National Asbestos Mines Ltd. at Thetford Mines, Quebec



Asbestos occurs as a crossvein fiber in seams in serpentine rock

Quarrying asbestos ore is an exacting process. The asbestos fiber occurs as thin seams in the serpentine rock. The asbestos must be carefully protected from contamination or discoloration by wood, roots, organic matter or ground water. After the ore is exposed, the quarry is kept free of standing water. During the winter, snow is removed before work continues in the quarry.

Before the new mine was opened up, most of the overburden was removed. This process is still going on. More than 2 million cu. yd. of heavy gravel, clay and gumbo have already been stripped, hauled and dumped; half a million cu. yd. is still to go before the job is done. Electric shovels with 4½ cu. yd. buckets work with a fleet of 22-ton diesel trucks to strip overburden during one shift a day. The other shift digs and hauls asbestos ore to the mill about half a mile away.

Once the overburden is removed, crevices in the rock are stripped by hand. Finally, the whole outcrop area is washed down with high-pressure water until the black-rock hanging wall and green-seamed serpentine virtually glisten.

Four pneumatic drills put down holes into the serpentine host rock. Each hole is about 45 ft. deep and inclined about 75 deg. Blasting is done once a week to keep ahead of the shovels. These shovels can usually load out up to 3,600 tons of ore a day. Compressed air for the drills is supplied by a 2,500 cfm. central compressor station. Air at 90 psi. is distributed to the quarry through a system of 8-in. diam. pipe.

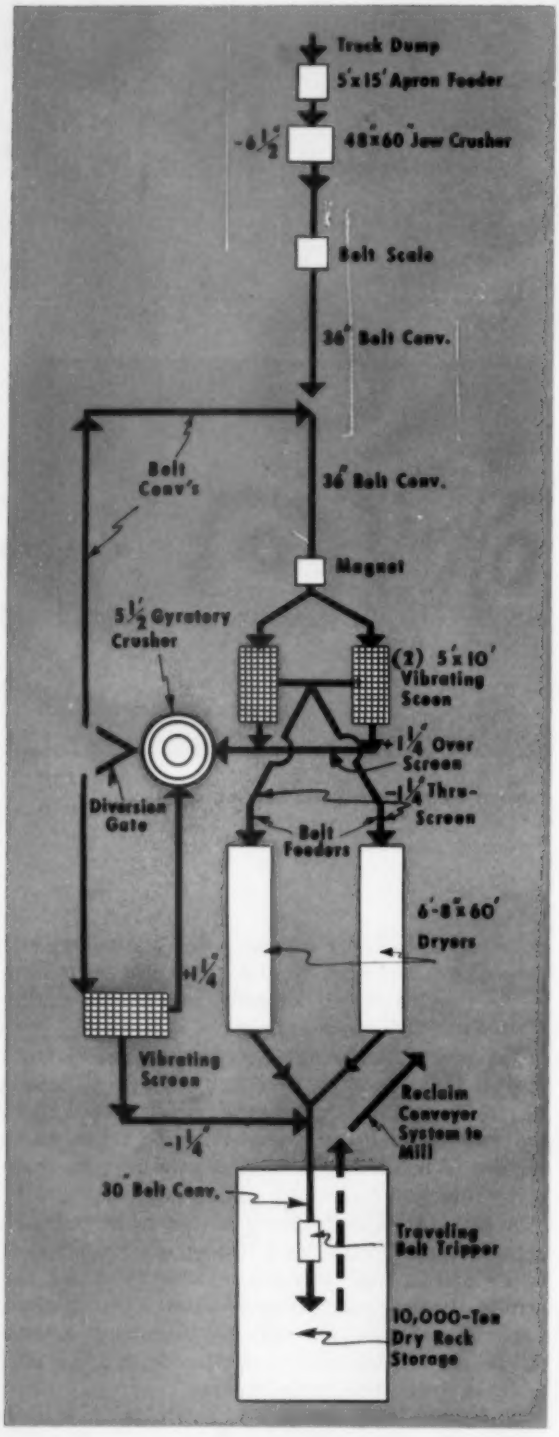
About 15 tons of hard, tough serpentine rock must be processed for each ton of asbestos produced. This calls for a great deal of crushing and screening equipment to prepare the ore for milling —the process which actually removes the silky fibers from their rock matrix.

The blocky, run-of-quarry ore is all put through a 48 x 60-in. jaw crusher to reduce it to minus 6½ in. The primary crusher is fed with a 5 x 15-ft. manganese-steel apron feeder in the truck dump hopper. When the ore is relatively dry, an operating rate close to 500 tph. is maintained.

A 36-in. wide belt conveyor under the primary crusher picks up the crushed rock and transfers it to an 850-ft. long belt conveyor system for the trip to the secondary crusher. Above the crusher, the flow of ore is split between vibrating screens. All minus 1¼-in. rock is sent to dryers; all plus oversize is dropped to the crusher.

This secondary crusher is a 5½-ft. cone unit

National Gypsum Co. jumps into asbestos production *continued . . .*



set for 1¼-in. discharge. A splitter plate under the crusher determines the volume of material recycled back to the screens or diverted to by-pass the dryers. Diverted material is screened, with oversize returned to the crusher and through-screen ore going directly to the foot of a storage belt conveyor.

This simple screening circuit reduces the amount of material processed through the dryers. When the rock is nearly dry enough to go to storage, most of the flow goes through this system. But with normal operation, the splitter plate is adjusted to produce a blend of dried and undried rock going to storage.

Moisture control in the asbestos ore is achieved with 6 ft. 8 in. x 60-ft. rotary dryers. The capacity of each unit depends on the initial moisture of the rock, but the maximum materials-handling capacity of a dryer is about 100 tph. Maximum temperature of the dried rock is controlled at about 85 deg. F. When this rock is mixed with undried rock and stored, the moisture of the stored material declines to about 1 percent.

Each dryer is equipped with an oil-fired furnace to supply heated air at about 250 deg. F. The air flow through the dryer is concurrent with the flow of material.

The construction of the dried-ore storage building is conventional for the asbestos district but unusual elsewhere. The lower half of the building is built up of compacted ore tailings to form a long narrow storage hopper. The angle of repose of this material is the same as that of asbestos ore, assuring that only usable ore will be withdrawn to the reclaim tunnel beneath the storage area.

A steel framework covered with corrugated asbestos-cement forms a roof and gallery over the entire storage area. Dried rock is distributed with a belt conveyor and traveling tripper mounted in the gallery. This tripper can distribute ore uniformly any distance along the length of the building, or can pile it on one place. In this way, ore can be distributed to make a uniform blend of material, or can be segregated in one part of the storage area.

Asbestos ore is removed from storage through a series of gates in the reclaim tunnel. A belt conveyor system takes the rock to the top of the mill building where an air hood over a vibrating screen takes the first long fibers out of the ore. Minus ¼-

Please turn to page 98

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Asbestos mining

continued from page 96

in. rock through the screen continues on through the mill.

Asbestos milling is a pneumatic process. The fluffy asbestos fibers are picked up from the decks of shaker screens by suction; the giant fans pump about 50 tons of air for each ton of asbestos fiber recovered.

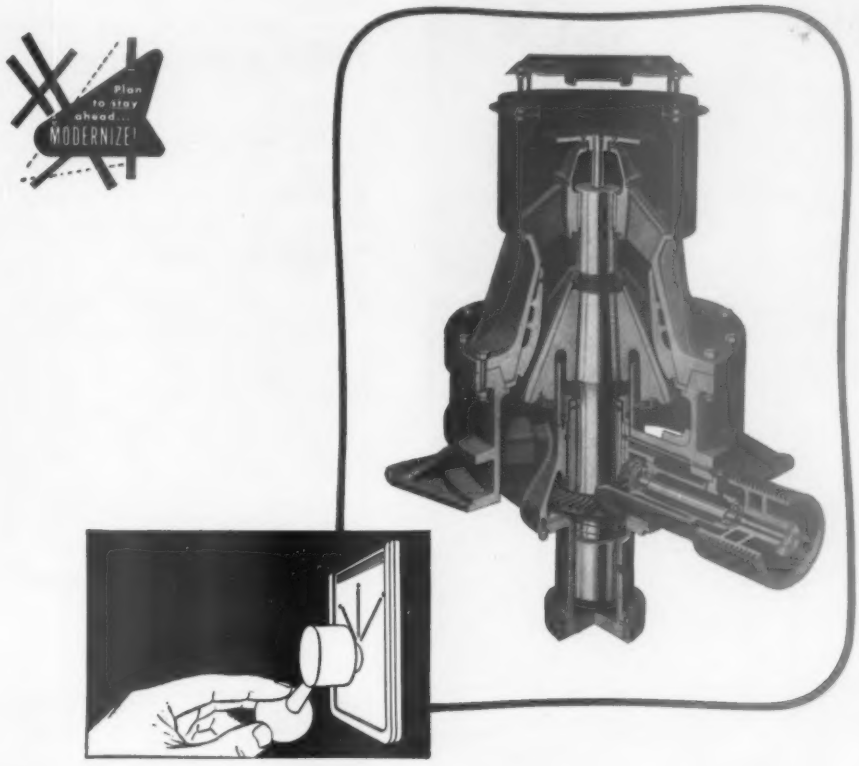
A series of crushing and screening operations prepare the asbestos ore from the storage building for this process. A 5½-ft. cone crusher reduces all plus ¼-in. ore to this size in closed circuit with vibrating screens. Pneumatic hoods pick up the first fibers and collect them in cyclones; refuse is taken to a fiberizer—a swing-hammer mill. The products from this mill are passed over screens, and the newly exposed fiber is collected.

The fiber concentrates are processed to remove the final traces of rock dust and to separate them

Please turn to page 100

Pneumatic drills put down 45-ft. deep holes into the asbestos ore formation

Right: After the blast, the material at the face is ready to be loaded out and hauled to the primary crusher



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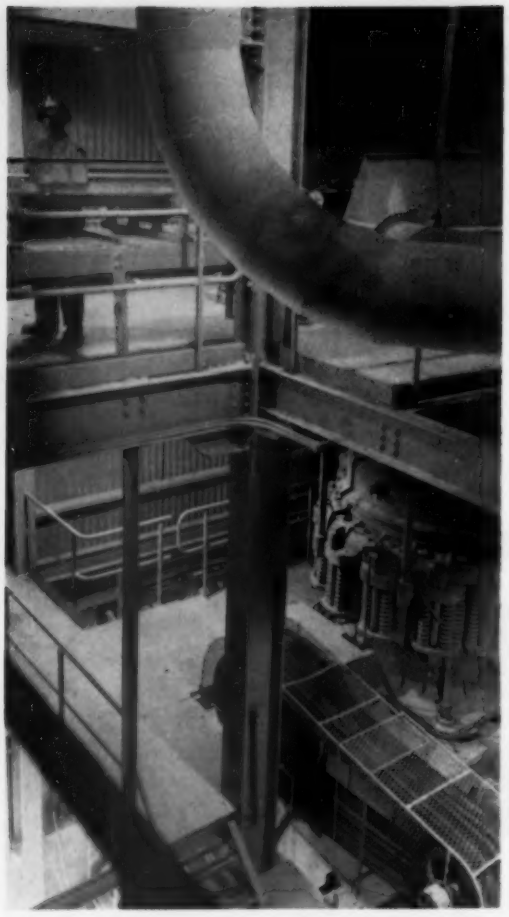
Asbestos mining

continued from page 98

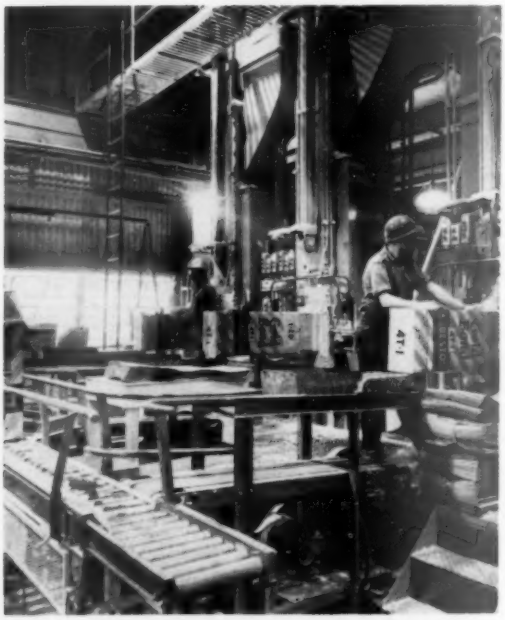
into the various grades made at this mill. Graded asbestos fibers are pressure packed into solid, 100-lb. blocks of material. This method makes a solid, compact unit which is easy to handle and saves valuable shipping space. **END**



A 5½-ft. gyratory secondary crusher makes a minus 1¼-in. product

MAJOR EQUIPMENT REFERENCE

Electric shovels, 4½-cu. yd.	Bucyrus-Erie Co. of Canada Ltd.
Crawler-mounted drills, 4½-in.	Gardner-Denver Co. (Canada), Ltd.
Haulage trucks, 22-ton rear-dump	Euclid (Great Britain) Ltd.
Apron feeder, 5 x 15-ft.	Stephens-Adamson Mfg. Co. of Canada Ltd.
Jaw crusher, 48 x 60-in.	Allis-Chalmers Mfg. Co.
Weighing belt feeders	Trans-Weigh Co.
Vibrating screens, 5 x 10-ft.	Hewitt-Robins (Canada) Ltd.
Cone crushers: 5½-ft. std., 5½-ft. short-head	Nordberg Mfg. Co.
Rotary dryers, 6 ft. 8 in. x 60 ft.	Hardinge Co., Inc.
Conveyor belt tripper, Conveyor belt idlers	Hewitt-Robins (Canada) Ltd.
Fiber collectors	Hartco Steel Products Ltd.
Dust filters	American Wheelabrator & Equipment Corp.
General contractor	R. E. Stewart Corp.



Asbestos fibers are tightly compressed into small bales which are inserted into bags for shipment

Left: Groups of air ducts above batteries of shaker screens draw off asbestos fibers

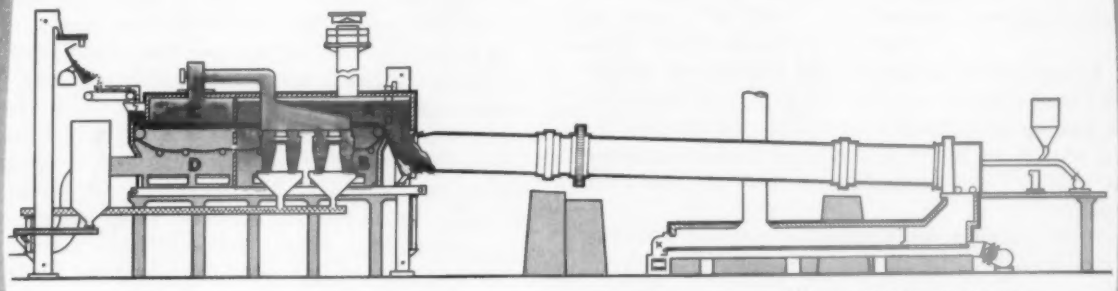
ACL pellet process cleans up cement making

Pelletizing of raw materials makes possible the dust-free operation of the *ACL* "double-pass" traveling grate system.

Along with clean production, making cement with pellets affords a barrel of bonus benefits — product reclamation, maximum burning efficiency, power savings, small space requirements.

How *ACL* "Double-Pass" System Works — In first pass (A to B) 1800° gas from kiln partially calcines feed in section nearest kiln. Gas temperature is reduced to 500°. Cyclones reclaim air-borne dust. In second pass (C to D) green pellets are dried and heated to about 500°. Gas stripped of heat and dust is exhausted in a mere wisp.

For the complete story, see your A-C man or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. In Canada, write Canadian Allis-Chalmers, Ltd., Box 37, Montreal, Quebec.



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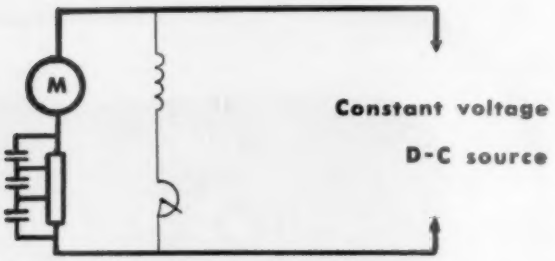

Figure 1 Original control for No. 1 kiln. Motor was thrown across 250 volts, with resistor to limit inrush current. As motor came up to speed, accelerating contactors closed in sequence to short circuit the resistor. Field rheostat adjusted motor speed

Tiny amplidyne forces correct kiln speed

by L. M. Hand & J. R. Eliason†*

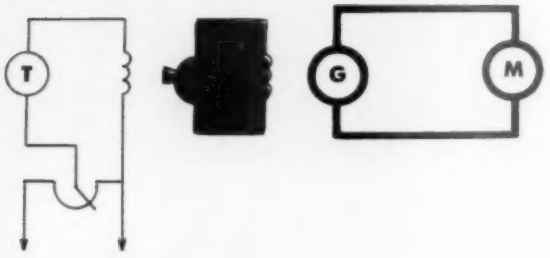

Figure 2 Adjustable voltage drive with amplidyne speed regulator. Rheostat sets reference, which is compared with tachometer voltage. Amplidyne operates on generator voltage to bring kiln to proper speed

AMPLIDYNE SPEED REGULATORS are giving Olympic Portland Cement Co., Bellingham, Wash., better control of cement consistency and quality. With variations in cement quality of top interest these days, the advantages of the amplidynes makes them important news.

The amplidyne is a small high-gain exciter widely used in industrial applications for about 15 years. Believed to be the first such installation in a cement plant, the amplidynes on Olympic's two kilns have several advantages. Their close control of speed, adjustment over a wide range of speeds and low maintenance cost have more than met original expectations.

Looked at more closely, the amplidynes mean: 1) There is no perceptible change in kiln speed due to loading variations. This assists the operator in his important job of keeping the burning process in balance and producing clinker of consistent quality.

2) By using a speed rheostat provided with the amplidyne, the kiln operator has more precise control than ever before. Speed comes to exactly the desired setting; response to a change in setting is rapid. Too, speed changes in increments of ½ rph. are easily selected.

With the old method of speed adjustment by motor field control, it was very difficult to get a desired speed without overshoot and successive corrections. Mechanical inertia and time lags in the motor field were the culprits.

3) A wider range of speed adjustment is now possible. Top speed possible is 100 rph., but a regulator adjustment can be used to set maximum speed at any value below that. For chores like rebricking, the kilns are operated at 4 rph. Previously the speed range was limited to four to one.

A final, incidental advantage: The slurry feeder on Olympic's No. 2 kiln can be easily adjusted in relation to kiln speed by controlling the feeder-motor field. The feeder drive is a dc. motor supplied with current by the kiln generator. A special instrument, located on the operator's control panel, indicates the relation between feeder speed and kiln speed. This helps "calibrate" the operator when adjustment is needed. The original feeder-drive setup was kept on the older No. 1 kiln.

Cost and reliability were considered as well as performance. Although regulating systems can become rather complicated, the desired results were obtained here with a simple speed regulator. This was the first feed-back control to be used in

Please turn to page 104

*Chief Engineer, Olympic Portland Cement Co., Bellingham, Wash.
†Application Engineer, General Electric Co., Seattle, Wash.

ACID AREA APPLICATION. Safety equipment and clothing are a "must" for personnel in the acid atmosphere of Dow's chlorine plant at Freeport, Texas. This *Super-Seal* motor came prepared, too — with *Poxeal* insulation guarding the stator.

2-year acid test! Open motor beats enclosed type at its own game

In a tough acid pump installation, Dow Chemical's Texas Division experienced no end of motor troubles. It seemed nothing could stand up in that humid, corrosive atmosphere. Reports Dow: "Even with totally enclosed motors, winding failures were frequent." And, they might have added, expensive.

Then came *Super-Seal* motors — Allis-Chalmers open-type motors with amazing *Poxeal* insulation. A durable case of epoxy-resin encloses the winding end turns and slot portions of the stator . . . the most complete protection ever developed. Result? The *Super-Seal* motor, after two years of continuous operation in the acid area, is as good as ever. So good, in fact, that Dow has ordered 150 *Super-Seal* motors for a new chemical plant at Freeport, Texas.

Isn't it time to revaluate *your* motor standards? There's a good chance that costly enclosed motors are no longer needed. Contact your A-C representative or distributor, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

Super-Seal and *Poxeal* are Allis-Chalmers trademarks.

ALLIS-CHALMERS

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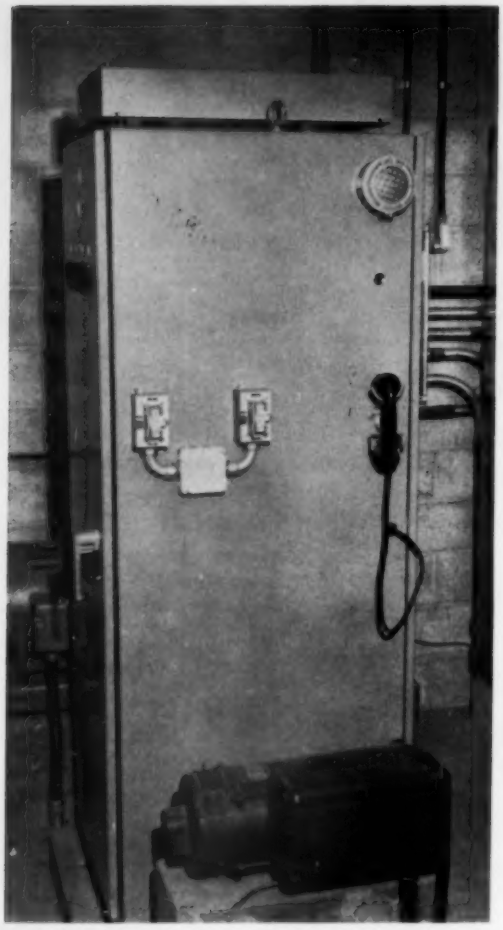

Control equipment for No. 2 kiln is in this air-conditioned room. The dc. drive control devices are in the large cabinet, with the small amplidyne set in lower foreground

Amplidyne *continued from page 102*

the plant, but the maintenance personnel have had no trouble with it. And no loss of production can be ascribed to the regulator in four years of operation, something which couldn't be said of the accelerating contactors previously used.

The addition of the speed regulator to a conventional adjustable-voltage drive cost less than $2,000. Compared with total kiln cost, this increment is about 1/10 of 1 percent.

The changeover to adjustable-voltage operation on No. 1 kiln was made easily. The 125-hp. drive motor was adequate in size. The constant-voltage m-g set was made available for adjustable-voltage use merely by moving the constant-voltage loads to a small exciter.

The first amplidyne at Olympic was installed in 1953 on the big 410-ft. No. 1 kiln. At this time also, a new drive setup was put into operation—the basic Ward-Leonard drive, now the commonly accepted design for kiln drives. Previously the drive had been a dc. motor at constant armature voltage. With the installation of the amplidyne regulator in place of speed adjustment by motor field control, more effective speed regulation was obtained. So successful is the new setup that it was chosen for use on Olympic's second kiln which went into production in January, 1958. These two drives are believed to be the only speed-regulated adjustable-voltage kiln drives in the country.

The No. 1 kiln with the older drive made millions of barrels of cement. But it was felt that the cost of improvements could be easily justified. The old setup had several drawbacks. The wandering of speed was often as much as 10 percent, which upset the balance of speed, draft and combustion. As noted earlier, time lags in the motor field and in mechanical inertia made it difficult to adjust speed without overshoot and successive correction.

Finally, the drive motor was started with the use of armature accelerating contactors. The contactors required a great deal of maintenance and caused some loss of kiln production. Since a kiln is started so seldom, the contacts and relays collected appreciable quantities of dust between periods of use. Then, when called upon to operate, they occasionally failed to make proper contact.

The original control at kiln No. 1 is shown in Fig. 1. The motor, M, was thrown across 250 v., with a resistor to limit inrush current. As the motor came up to speed, the accelerating contactors closed in sequence to short-circuit the resistor. The field rheostat was used to adjust motor speed.

The new drive control and speed-regulation setup is shown in Fig. 2. The kiln drive motor, M, rotates at a speed dependent on the voltage of the generator, G. This generator voltage, in turn, is fixed by the output of the amplidyne beside it.

The speed reference is set by the rheostat, selecting a voltage from the control source. It is automatically compared with the voltage of the tachometer, T, which measures actual kiln speed. If the kiln speed is not as called for by the reference, an error current flows in the amplidyne field, and kiln speed is rapidly forced to the correct value. Not shown in the diagram are the stabilizing and current-limit functions which make possible maximum accuracy and speed of response. Design and installation of the kiln drive regulation equipment was by General Electric Co. END

Stone quarry owner rates Chevrolet best at saving money

"My '59 Chevies move more material at less cost than any other make I've had."

—R. G. SNYDER,
SNYDER STONE QUARRY,
MARTINSVILLE, VIRGINIA

"Put a Chevrolet out on the job and it'll stay there. Upkeep costs are at a low minimum. You never do wear one out; you just get tired of looking at it and buy a new one.

"I move material at less cost per mile with this '59 Chevrolet than any other make of truck I've ever had. And it'll move over the road with a full load as fast as a light truck. Chevrolet trucks get better and better every year. I've never seen a more dependable truck than this '59. Keeps going and going with no downtime at all for major service work."

Chevy, you'll find, is winning a lot of new boosters among mining and quarry men, for a number of good reasons. Reasons like money-saving *power*, for instance. Chevrolet for '59 offers newly improved valve-in-head 6's that nurse a gallon of gas like nothing in trucks has before. Or big V8's for every Series that include the shortest stroke design—the best saving design—in the field. And for the *toughness* that leads to low maintenance, Chevy's advanced chassis components are specially designed for the capacity to out-muscle the roughest kind of runs. For the *latest* in low-cost hauling equipment, see your Chevy dealer! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

CHEVROLET

No job's too tough for a Chevrolet truck!

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Daley's 300-tph. integrated sand and gravel plant in Murphy's Canyon has ample space for huge stockpiles, big machinery and mix plants—with lots of room for expansion

by Walter B. Lenhart

Cliffside deposit speeds processing

THE NEW SAND AND GRAVEL PLANT of Daley Corp. has plenty of equipment to do the job, and plenty of space to arrange the machinery most efficiently.

The lay of the land helps a lot. This 300-tph. plant spreads along the floor of the Murphy Canyon near San Diego, Calif., while the sand and gravel deposit is high above on the edge of the canyon. With this arrangement, there is plenty of room to make a huge stockpile of raw material by simply dropping it over the edge of the cliff. There is ample opportunity to extend the processing plant if more products or larger stockpiles are needed. There is enough space to put in more ready-mix, sub-base mix and bituminous concrete plants.

Two carry-alls and a pair of bulldozers will work the very deep deposit. The gravel is partly consolidated, and the sand occurs in lenses. For the first few months of operation one 'dozer has been bringing raw materials to the primary crusher hopper, while the second unit keeps the hopper full.

Primary crushing, washing and screening is done at the deposit, about 200 ft. above the floor of the valley. Sand and gravel is separated at this point and placed in two storage piles ahead of the main screening plant. All raw material is fed to an 18 x 36-in. jaw crusher set at 4 in. A short belt conveyor delivers the crushed material to a 4 x 14-ft. double-deck vibrating screen. This unit has water sprays which flush both the natural and crusher sand through the screen to a flume which takes it to a sand plant.

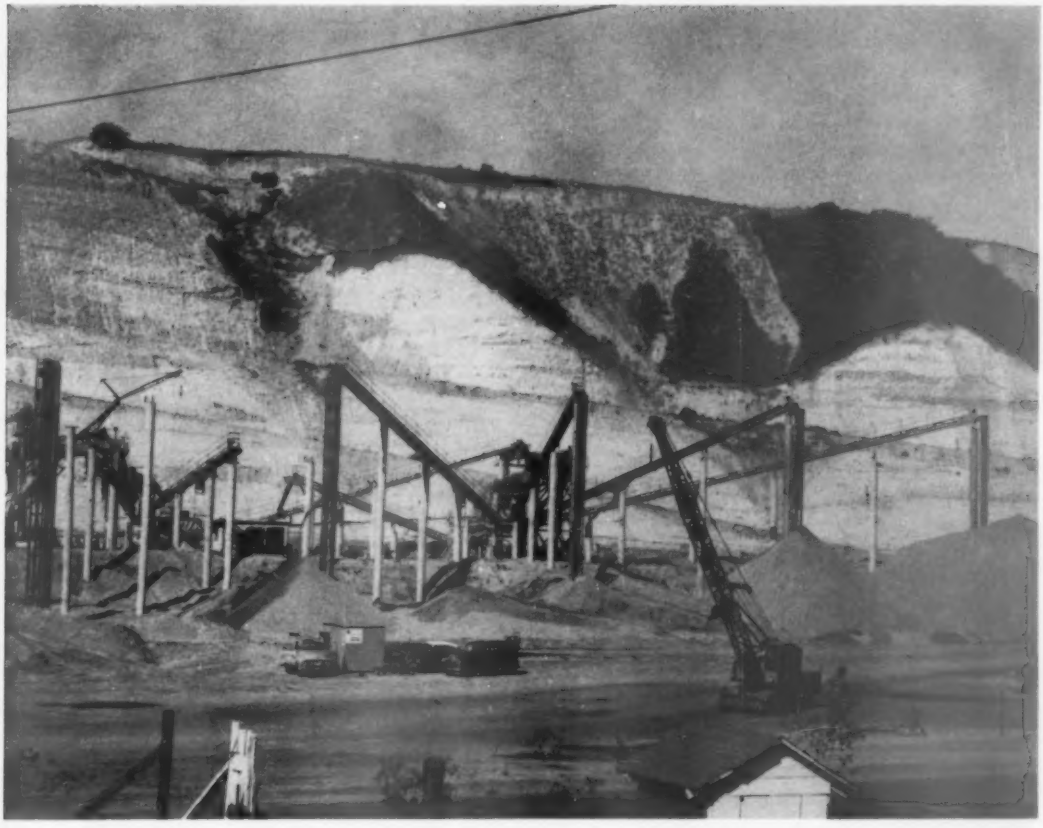
Sand is a very important product of the new plant. Great care is taken to clean it thoroughly, for this fraction contains much of the clay and siltstone found in the deposit. A pair of 9-spigot water scalpers split the flow of sand from the wet vibrating screen. Normally, these machines can make several sizes but, at the moment, they are making only concrete sand. After the sand is dewatered, it is dropped over the edge of the cliff to form a large stockpile.

Gravel is stockpiled with a belt conveyor cantilevered out over the edge of the cliff, making a pile nearly 200 ft. deep. Both sand and gravel are reclaimed through a concrete tunnel with a belt conveyor for each product. Sand is taken to a stockpile for finished material over a reclaim tunnel. Gravel is taken to a screening and crushing plant for further processing.

The gravel must be processed to remove the clay and siltstone which remained with it. Most of these deleterious materials seems to concentrate in the 1¾-in. sizes. This fraction is scalped off, scrubbed thoroughly in a log washer and returned to the flow of gravel. Silt and slime is sent to a tailings pond; the polished gravel is taken to the top of a washing screen. *Please turn to page 108*

Left: Primary crushing and screening plant on the edge of the canyon makes first separation of sand and gravel

The "wet" end of the new plant, with the primary crusher and massive deposit high above the floor of the valley, supplies dry-batch and sub-base mix plants



The "dry" end of the plant, with its piles of crushed sand and gravel, supplies a pair of bituminous-mix plants

Daley Corp. *continued from page 106*

A 3 x 6-ft. vibrating screen takes off the 4 x 1¾-in. gravel, dropping the through-screen materials to the log washer. A 5 x 14-ft. double-deck washing screen has a ⅜-in. section on the top deck to take out any fines in the gravel. This sand is pumped back to the sand plant. Second section of the screen scalps off 4 x 1½-in. gravel and drops it to a 4¼-ft. cone crusher. The lower deck makes two products for the stockpiles: a 1½ x 1-in. concrete aggregate and a 1-in. x No. 4 concrete aggregate. Belt conveyors make a 60-ft. stockpile of each material. Each conveyor discharges through a stone ladder to reduce degradation in the deep piles.

The cone crusher is the first unit in the "dry" section of the new installation, and most of the products are used in the bituminous concrete plants on the property. A 4 x 16-ft. double-deck vibrating screen takes the crushed gravel and removes the crusher dust for stockpiling—dust for use in the hot-mix plants.

A huge three-deck vibrating screen is ingeniously arranged to make six products. However, at the start-up of the new plant the two largest sizes will be crushed in a cone crusher and recycled to the screen, and only four stockpiles will be made. Unusual feature of the giant screen is the way in which the two lower decks are segmented to hold four screening surfaces to draw off four products. The top deck is a single-screen surface, but is fitted with two different screen cloths. The first 11 ft. of the top deck takes out minus ½-in. gravel; a 5-ft. section takes out minus ¾-in. material. The oversize from this deck is combined with the oversize from the second deck as crusher feed.

Dust from the lowest deck is sent to the dust stockpile, while the ½ x 5/16-in. fraction is stored for use in the hot-mix plants. The second segment makes three products: a plus 1 in., and 1 x ¾ in. and ¾ x ½ in.

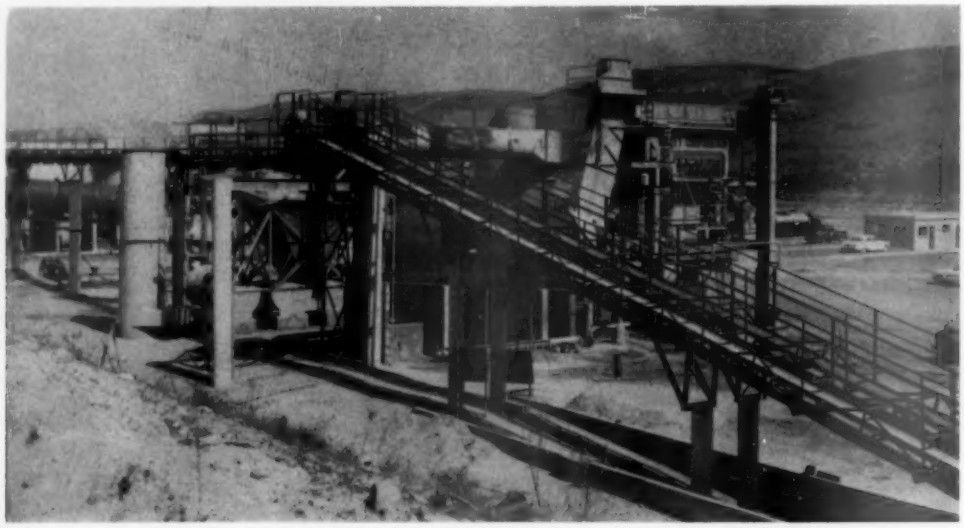
Four batch plants on the property use the prepared sand and gravel. These plants are served by belt conveyors in a reclaim tunnel under the full length of the huge storage area.

Two bituminous concrete plants at the north end of the plant are served by a pair of belt conveyors under the piles of dry, crushed gravels. Reclaim gates under each pile permit each plant to draw from any pile at the same time or to make blends of different sizes to meet specifications. Each hot-mix plant has its own conveyor system.

At the south end of the new installation is a dry-batch plant and a sub-base mix plant. A belt conveyor system under the piles of washed materials serves each of these plants, with each plant having its own belt conveyor. **END**

MAJOR EQUIPMENT REFERENCE

Bulldozers (4)	Caterpillar Tractor Co.
Carry-alls (2)	Caterpillar Tractor Co.
Primary jaw crusher, 18 x 36-in.	Pioneer Engr. Works
Vibrating screen, 4 x 14-ft. wet	Nordberg Mfg. Co.
3 x 6-ft. wet	Nordberg Mfg. Co.
4 x 16-ft. dry	Nordberg Mfg. Co.
Cone crushers (2)	Nordberg Mfg. Co.
Water scalpers (2)	Eagle Iron Works
Dewatering screw	Eagle Iron Works
Log washer	Eagle Iron Works
Dewatering screw	Western Machinery Co.
Vibrating screen, 5 x 14-ft. wet	Overstrom & Sons, Inc.
5 x 16-ft. dry	Overstrom & Sons, Inc.
Conveyor idlers	Chain Belt Co.
Bituminous concrete batch plants (2)	Madsen Iron Works
Ready-mix batch plant	C. S. Johnson & Co.
Sub-base mix plant	Barber-Greene Co.
Plant design and construction	Daley Corp.



Two belt conveyors bring crushed gravels to the two hot-mix plants

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Moves more tons per man-hour

Here it is: the revolutionary LW Haulpak . . . introduced by LeTourneau-Westinghouse after more than 3 years of research, development, and field-testing. All new from the wheels up, Haulpak gives you highest output at lowest ownership and operating costs.

Haulpak gives you a hauler built to heavy *earthmoving* standards, not merely *automotive* specifications. Many parts and assemblies are identical to those used on thousands of jobs on famous LW Tournapulls®. With Haulpak, your maintenance, repair, and operating costs will drop to a new low . . . and your hauling tonnage will climb to new highs.

Detailed specifications are ready. Ask for them!

- 22, 27, 32-ton capacities
- 290, 335, 375 hp
- Haul up to 30% more than their own weight
- Need no springs, because they ride on Hydrair* (exclusive LW air-suspension system)
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- Non-stop U-turns in far less space than conventional trucks
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- Exclusive LW power-transfer differential

Although brand new, Haulpak is fully field-tested. These machines have been put through rugged tests under tough working conditions for over 14 months — in mines, quarries, and on construction jobs. Here a Model 27 Haulpak gets a heaping load on one of its "test" assignments.

*Trademark HP-2098-G-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Rocky's Notes *continued from page 18*

effect than silicate minerals; (2) that the addition of gypsum to the aluminate cement [fraction] produced a contraction more than twice as great as the addition of calcium chloride; (3) that for the production of a dense [artificial] stone with minimum microporosity caused by contraction, portland cement with a minimum aluminate content, under otherwise equal conditions, should be used."

The following observation seems of particular interest: "In three months, one part by weight of tricalcium aluminate produces approximately the same contraction as three parts by weight of tricalcium silicate, while one part by weight of tetracalcium aluminoferrite is hydrated with approximately the same volume shrinkage as three parts by weight of tricalcium silicate. As in most commercial cements, the total silicate content is about three to four times the total aluminate content; the aluminate and aluminoferrite components of the cement, despite the relatively low content, produce the same volume contraction during hydration of the cement as the silicate components, which usually comprise 75 to 80 percent by weight."

Of course, the aluminum and iron components are necessary to the present process of making portland cement, since it appears to be impossible to make the calcium silicates without their help in lowering the kiln temperatures to practicable values. However, judging by progress made in other chemical industries, it does seem possible that a process or a catalyst may be found which will permit the manufacture of the calcium silicates without these impurities. Steam, for example, is a well known catalyst in many mineralogical reactions. Hydrated calcium silicates are formed in the sand-lime brick process. Were the proportions of sand and lime correct for forming an hydrated tricalcium or dicalcium silicate, the removal of the hydration water (or water of constitution) should be a simple operation.

The same two authors quoted above also report in the third paper on their experiments to find a test for the freezing resistance of concrete by measurement of the surface hardness of the hardened cement paste. Following are their conclusions: (1) "The surface strength or hardness of cement stone concrete is a new and exact characteristic of the micro-structure of concrete. (2) The surface strength method proved to be the most sensitive method for determination of frost resistance of cements, as it discloses the loosening of the structure by the action of heat and water, which commences on the cement surface. (3) Determinations of the frost resistance of cements in conditions of high water saturation by this method showed that belite cement is the most resistant and aluminoferrite the least, of the cements tested." This last conclusion is of special interest to us, because we are continuously arguing that it is the dicalcium silicate in portland cement that contributes most to its ultimate strength, density and durability. The "belite cement" referred to above was 88 percent C_2S and only 8 percent C_3S.

The method of measuring the hardness of the 12-mo. old 1 x 1 x 3 cm. cube specimens was by means of a hard alloy tip in the shape of a four-sided pyramid with vertical angle of 40 deg. and a square apex with 48 μ sides under a loading of 200 grams.

The hardness R_T was measured as the ratio of the newly formed surface S (in μ^2), expressed as a function of the penetration depth h (in μ). It was found that good direct relationship exists between the surface hardness and bending strength.

The theory back of this test seems to us to be sound. Frost damage as well as most other injuries to concrete durability start at the surface; and if the surface is hard and impenetrable, the concrete should be protected from disintegration. It seems obvious from the variety of results obtained in the current freezing and thawing test that it is far from satisfactory as a measure of durability. However, it appears that the cement specimens have to be aged for at least 6 mo. to get significant results with this hard surface test. Hence, its value appears to be chiefly to determine the most durable type of cement.

The paper on "Mixed Accelerators of Cement Hardening" contains these conclusions: "(1) A mixed additive, consisting of sodium sulfate and calcium chloride, produces a considerable acceleration of cement hardening at all ages, and is particularly effective for slag portland cements, both in natural hardening conditions, and with steaming. (2) The considerable acceleration of slag portland cement hardening is explained by the power which the mixed additive has of producing simultaneous alkaline and sulfate activation of the slags, leading to the formation of the corresponding hydro-silicates, hydro-aluminates and calcium hydro-sulfo-aluminate, and so causing a rapid strength increase of the cement. (3) The sulfate and alkaline activation is the result of a reaction between calcium chloride and sodium sulfate, with the formation in the liquid phase of finely dispersed active gypsum, which is an active sulfate activator. The activation is also the result of a reaction between sodium sulphate and calcium hydroxide with the formation of sodium hydroxide, which like calcium hydroxide, is an alkaline activator. (4) Use of mixed additives is recommended for factories manufacturing ferro-concrete articles [reinforced concrete products] especially with the use of slag and pozzolan portland ce-

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with hustling, go-anywhere tractor

Are you still supporting *part*-time pit workers — 3 or 4 crawler tractors — for maintenance jobs? You're carrying unnecessary overhead if you do. Limited speed and mobility tie crawlers down to a limited working area. Lack of continuous work in those "pockets" often keeps them idle much of the day. Yet the cost of owning and maintaining a fleet of localized dozers is continuous.

It's possible that you may be able to replace those inefficient units with a single tractor . . . a mobile dozer-*on-rubber* that goes anywhere anytime you have work to be done. The 17-mph, 218-hp LeTourneau-Westinghouse C Tournatractor® is a "hit-and-run" specialist that handles pit housekeeping *just* as efficiently as a fleet of several special-purpose crawlers and can often cut clean-up and other dozing expense by half the present cost or more.

Travels at twice crawler rate

Tournatractor gives you the speed and mobility that pays off in servicing scattered locations. Travel to the next job is at speeds up to 17 mph — twice as fast as that of most crawler-mounted dozers.

Speed ranges, 4 forward, 2 reverse, are selected by simple hand lever. Within ranges, torque converter automatically adjusts power to load. Blade movement is accurately controlled electrically, through finger-tip dashboard switches.

Check your multiple tractor operations for productive hours of operation. If travel and waiting time figures 30% or more be sure to ask for a Tournatractor demonstration.

Stripping dirt and clay overburden is just one of many jobs C Tournatractor takes in stride for Millbrook Quarries, Inc., Broad Run, Va. Handy "hit-and-run" dozer also cleans up pit after blasting, shapes limestone stockpiles, cleans around crusher, and tows equipment. Output averages 1,000 tons per day.

"If I could get a hold on it, I could move a mountain with this Tournatractor," says Operator Claude Wampler at Millbrook Quarries. "This dozer's got plenty of power and speed, doesn't take all day to get to a job. It's easy to throttle down from high travel-speed."

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LW

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Where quality is a habit

Rocky's Notes *continued from page 110*

ments." This is chiefly interesting to us in showing that rightly used alkalies are desirable rather than detrimental in concrete.

The paper on "The Formation of Hydrated Calcium Chloro-Aluminates and Their Effect on the Structure of Cement Pastes" is interesting as part of the Russian approach to the problem of winter concrete without having to heat the aggregates or water. The conclusion is somewhat as follows: "The investigations of the kinetics of the hydration of tricalcium aluminate in mixed chloride solutions and analyses of the hydrates obtained showed that the more sodium chloride introduced into the system, the less the degree and the less the intensity with which the formation of hydrated calcium chloro-aluminates, especially the high-chloride form, proceeds. Therefore, the introduction of sodium chloride simultaneously with the calcium chloride into the aqueous medium permits the elimination of chloro-aluminate corrosion of the cement paste. The optimum amount of sodium chloride to be added depends on the mineralogical composition of the cement and on the temperature conditions of the hardening."

The use of large amounts of calcium chloride alone was found to be objectionable because: "During the plastic stage of formation, i.e., in the period in which the structure is still unformed, the hydrated calcium sulfo-aluminates contribute to obtaining a homogeneous, dense structure with increased water impermeability and frost resistance. The formation of these hydrated calcium chloro-aluminates, especially with the predominance of the high chloride form in the stage of crystallized structure, leads to the formation of internal stresses in the system, which can cause irreversible deformations and can destroy the structure of the cement paste (chloro-aluminate corrosion of the cement)."

"The addition of sulfite-alcoholic residue to a solution of only calcium chloride does not suppress, but merely slows down, the formation of the high-chloride form of calcium chloro-aluminate, and acts as a regulator of the structure formation of the cement paste by a different mechanism—adsorption. In particular, the sulfite-alcoholic residue prevents salting out of the sodium chloride in the cement paste, which is observed with its introduction in large amounts, and decreases the shrinkage of the cement paste with changes in the temperature conditions of hardening." It is not clear what is meant by sulfite-alcoholic residue, but presumably it refers to paper-mill waste products used in this country under various trade names. It is described in the paper as a hydrophilic-type, surface-active material.

The paper on "Investigation of the Effect of Strength Stabilization on the Properties of Cement and Concrete" is a Russian approach to the problem of mass concrete without elaborate cooling devices. The term "stabilization" is here used as a delaying action in order to effect desirable changes in the crystallization process. The agents used for the stabilizing effect are described as "hydrophilic plasticizing additives based on sulfite alcohol wastes," known to them as KBZh and TKB. The author, B. D. Trinker, states: "The results showed that the evolution of heat by hardening cement may be regulated by introduction of appropriate amounts of surface active additions. Because of the sharp decrease of the heat evolution rate on addition of increased amounts (above the optimum of 0.10 to 0.25 percent) of surface-active substances, strains in the concrete due to temperature shrinkage may be diminished. This suggests that a low thermal concrete for use in massive hydrotechnical structures could be devised with the use of the strength stabilization effect. The heat evolution results are in good agreement with data on the heat of evolution of cements with additions of ammonium lignosulfonates.

The authors conclusions are: "In the production of low-thermal concrete for massive construction, hydrophilic surface active substances may be used in amounts which cause strength stabilization of the cement. The use of quantities of these additives above the optimum values results in a decrease of the heat of evolution rate of the cement, and temperature deformations in the massive concrete are correspondingly lessened. The use of increased amounts of the additives, like that of the optimum amounts, improves the technological properties of concrete mixes and the properties of the concrete with regard to frost resistance, impermeability to water, and shrinking and swelling deformation, and may increase the durability of the concrete."

We trust we have quoted enough to show that much Russian research has to deal with practical problems. It is interesting that all the references given at the end of each paper are to Russian sources only. Either they are not familiar with the work of researchers in other countries or, like in other matters, they consider themselves self-sufficient. It is also interesting that the research referred to above was done on neat cement, with the exception of that on mixed accelerators where a 1:3 mortar was used. In this country we used to test neat cement specimens in tension and compression; and in our estimation it did show some cement characteristics that were helpful to know. As we recall, tests of neat cement were abandoned on the theory that since cement was never used neat, why such tests? The change to mortar and concrete specimens was helpful to cement manufacturers by introducing other variables and distracting too much attention to the cement itself.

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TODAY'S LOW-COST PRODUCER OF POWDERED MATERIALS

IT'S SIMPLE . . . COMPACT

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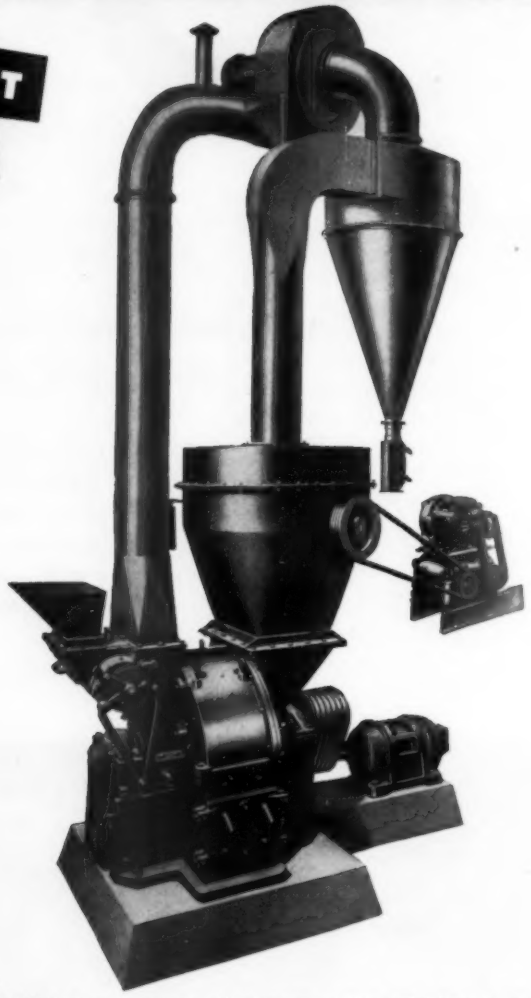
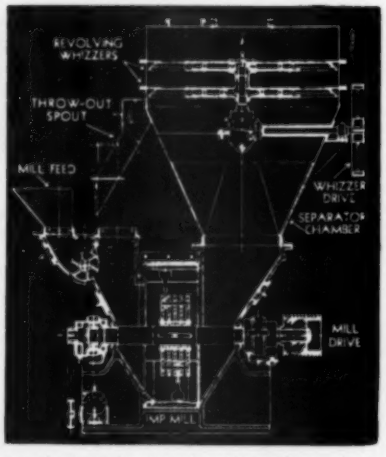


RAYMOND
WHIZZER TYPE
IMP MILL



Cross-Section showing location of revolving whizzers and independent variable speed drive. Fineness controlled by one simple adjustment while mill is running. Insures uniform classification for quality product.

ECONOMY enters into all phases of the IMP MILL. It starts with the installation . . . where the flexible arrangement of piping and collectors permits easy adaptability to your plant layout.

There are also important economies in operation since automatic controls save time and attention . . . while the simultaneous pulverizing, classifying and/or drying . . . all combined in a single unit . . . shorten the process and simplify material handling.

Raymond rugged construction and precision-engineered design assure long service life and minimum maintenance. All these factors add up to important savings in production, and give you a lower cost advantage in these competitive times.

Write for IMP MILL Catalog No. 87 which shows the many applications of this multi-purpose unit . . . and how it can be adapted to your pulverizing job.

COMBUSTION ENGINEERING, INC.
Raymond Division

1108 W. BLACKHAWK ST.
CHICAGO 22, ILLINOIS

Combustion Engineering-Superheater Ltd., Montreal, Canada

SALES OFFICES IN PRINCIPAL CITIES

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AMC meeting *continued from page 83*

prilled AN and crushed AN granules with No. 2 fuel oil gave a material that was usable on the second problem. Sodium nitrate was added to get density; but, since it reduced sensitivity, proportions were balanced to get a product that would sink and still have enough sensitivity to do a good job in fragmentation.

Cost advantages in the use of AN in wet holes under special conditions were reported. In one case, the operater who blasted water out of the holes reported cost savings as follows: cost for a hole loaded completely with high explosives, $43.44; cost per hole where water removed by shooting, and no water return, loaded with AN, $14.15.

Those who took part in the symposium included: R. W. Bell, superintendent, Erie Mining Co., Hoyt Lakes, Minn.; M. F. Withey, Jr., blasting engineer, Material Service Corp., Lyons, Ill., and Frank Coulson, mine manager, Central Ohio Coal Co., Zanesville, Ohio.

Seismic analysis is a new method used to determine easily, quickly and inexpensively when to drill and blast and when to rip overburden for lower costs. The process is based on the principle that sound or shock waves travel through different subsurface materials at varying speeds and along different paths. Developed by Caterpillar Tractor Co., the method is said to determine the thickness of various layers of subsurface materials to depths over 100 ft.

Equipment needed consists only of an 8-lb. sledge hammer, a small steel plate, a coil of wire, a geophone receiver, a seismograph and a set of tables. Use of the method will tell an operator if the material can be 'dozed and scraper loaded, or ripped and scraper loaded, or if it must be drilled and blasted for shovel loading. Purpose of making these findings, of course, is to use the lower-cost method of removing overburden and, thus, to increase profits. The method works only in ground where the layers of material from top to bottom are succeedingly more consolidated, according to C. R. Fahnestock, Caterpillar Tractor Co.

Use of special construction steels can reduce your costs, too. The comparatively new "T-1" steel developed by U. S. Steel Corp. is now used widely by industry, and its use is expanding. It has high-strength properties, good toughness and resistance to abrasion. Because of these qualities, use of the steel can bring savings due to weight reduction, lower fabricating costs and reduced maintenance.

Service records of units made of "T-1" steel

Please turn to page 116

"Quick discharging, excellent service"

says plant engineer

Two Blaw-Knox medium weight clamshell rehandling buckets are on 24-hour duty—with a third in reserve—at U.S. Steel's Universal Atlas Cement Division plant at Universal, Pennsylvania.

In handling a wide variety of raw materials—including slag and clinker—the 5-cubic-yard double lever arm clamshells have provided "excellent service," according to Mr. W. P. Lee, plant engineer.

Throughout industry, where continuous service and trouble-free performance is a must, Blaw-Knox Clamshell Buckets have earned a preferred status. An experienced Blaw-Knox Bucket engineer will be glad to study your bulk handling operations and help you select the clamshell buckets best suited to your requirements. Or you may wish to write for Bulletin 2378-R-1.

BLAW-KNOX COMPANY
Blaw-Knox Equipment Division
Pittsburgh 38, Pennsylvania

BLAW-KNOX

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AMC meeting *continued from page 115*

show life up to five times that of structural carbon steels. Savings have been gained in the following types of equipment where the new steel has been used: shovels; large, off-highway trucks; and heavy construction equipment trailers. Daniel J. Snyder, service metallurgist for U. S. Steel's Steel Operating Div., discussed the chemical composition of "T-1," its mechanical properties and its availability as to size, thicknesses and shapes.

Haulage is the last frontier of the mineral industry's cost sheet, according to Orrin D. Weeks, Calaveras Cement Co. That phase of quarry operation has not received the attention, for cost reduction possibilities, that other operating phases have received. A good reason is that a decision to change a whole haulage system is most often a difficult one. Mr. Weeks suggested that operating and financial problems require that a thorough study precede any change of haulage method.

In such study, you first should learn the characteristics of each type of system available, kinds of equipment, etc. Study them; know the advantages and disadvantages of each system as applied to your operation. Next, study your own quarry operation and know its characteristics well.

With that information at hand, it should be relatively simple to eliminate all but a few most applicable methods or combinations of equipment. Finally, a detailed engineering plan of the possible systems should be made. Know capital costs involved, and make the best possible estimate of operating cost in detail. Look at maintenance, operating time, contingencies, expense of financing—all the factors involved. The result will give you a good answer as to which system you should choose for maximum cost savings.

Cost reduction in quarrying through automation was reviewed by J. E. Doyen, Western-Knapp Engineering Co., Chicago, Ill. Instrumentation and electrical controls are getting a bigger play in the mineral industries. To get the proper cost advantage of such systems, the operator should know more about the automation devices that may have application on his job.

Automation can be applied, with cost advantage, to virtually all plants, regardless of size. The big, over-all job is usually limited to new installations,

Please turn to page 121

GARRISON

POWER STEERING

Now available for

DIAMOND T TRUCKS

Models 830-42M, 730-32M, and 830-36M

Drivers say they like Diamond T Trucks because of their excellent ride, faster shifting and *easy steering*—thanks to Garrison Power Steering.

With hydraulic power doing 80% of the work of turning, drivers get rigs in and out in a hurry, with far less fatigue. Equipment takes less of a beating, too. Shocks from rough terrain are absorbed by the power cylinder—not the steering mechanism.

Garrison Power Steering is available for larger models of Diamond T Trucks and can be installed as optional equipment at the factory, or provided in kit form for field installation. Get in touch with your Diamond T dealer today for complete information.

Garrison Power Steering is available for most other makes and models of heavy and medium trucks, truck cranes, and wheeled material handling and off-the-road equipment.

4609 East Sheila Street
Los Angeles 22, California

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Only Gardner-Denver offers 6 crawler drills for your choice

Swing Boom "Air Trac"® (Model ATD3000)—drills more holes from one position . . . reaches out to 2½′ on both sides of track for a total reach from side to side of 11′10″ with boom at 45° elevation . . . drills horizontal holes to 9′6″ above ground level. Like all "Air Trac" models, it is self-equalizing, self-stabilizing . . . moves safely, easily over rough terrain.

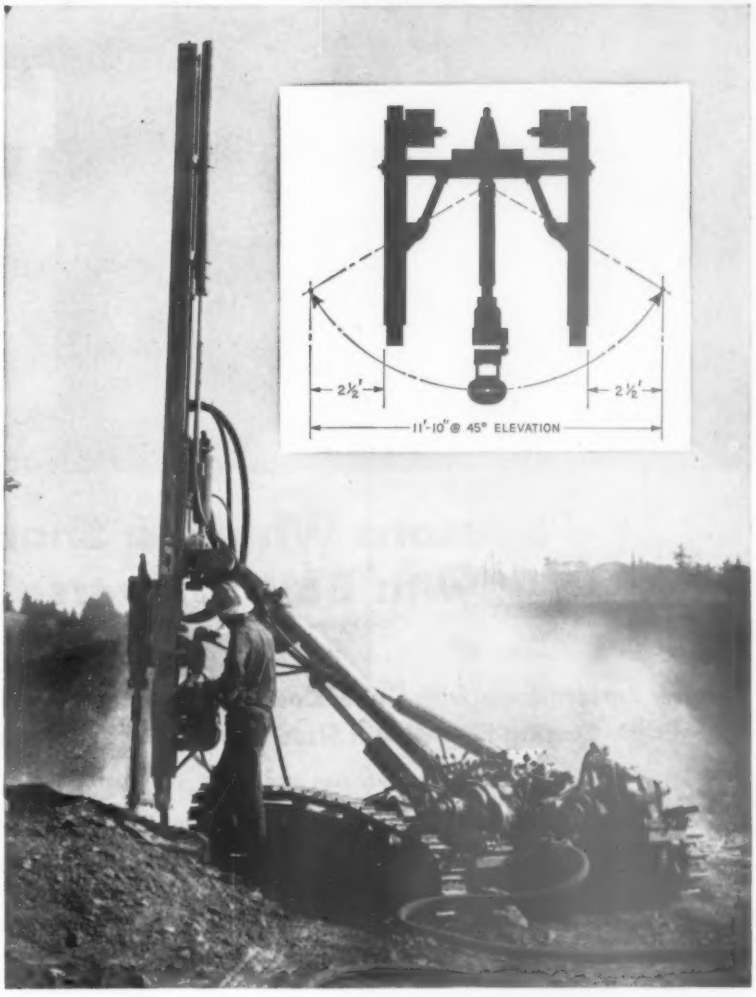
"Air Trac" (Model AT)—the first crawler drill . . . the carrier that made the wagon drill obsolete . . . still the only rig designed to level itself when riding over rough, rocky ground.

Model AT50—"Air Trac" with hydraulic drill positioner and hydraulic remote controls.

Model AT1000—with longer tracks and heavy-duty traction air motors for greater stability in severe terrain.

Model AT1500—like AT1000, has longer tracks and greater traction power. Designed for complete power positioning with hydraulic drill positioner and hydraulic remote controls.

Model HT-143—biggest and most powerful crawler drill available . . . carries the hard-hitting Gardner-Denver 5½″ drill.



Plus . . . the most complete line of field-proved drifter drills available . . . and quality, longer lasting Gardner-Denver sectional drill rods, couplings, and ring seal shanks.

Write for bulletin.

SETTING THE PACE

The trend to crawler drills in recent years was pioneered by forward-looking engineers and construction specialists who developed the Gardner-Denver "Air Trac," another example of Gardner-Denver's 100-year philosophy of growth—*there's no substitute for men.*

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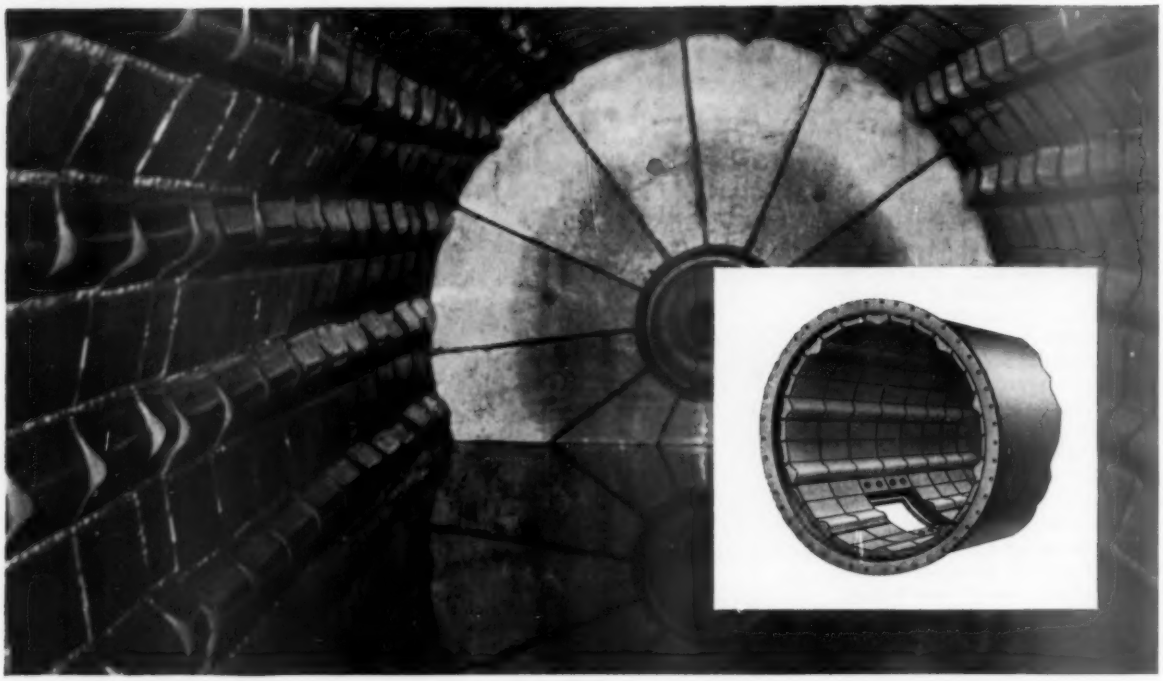

8 Reasons Why You Should Standardize with B&W Universal Liner Plates

Better Performance with Lower Costs— Same Casting Fits All Mill Sizes

B&W Tube Mill Liners reduce capital, time and labor costs. Consequently, they reduce the cost of the material ground. Here are eight reasons why:

1. Lower Initial Costs—standardization eliminates chiller and pattern costs.
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3. Longer Life for Different Applications—this is assured by selection of proper materials. Design is suitable for either chilled irons or wear steels.
4. Reduced Costs in Both Direct Labor and Outage —installation time is less because small size and weight of castings allows them to be handled easily, without cranes and with less fatigue for workers.
5. Reduces Costs in Storage Space—because small castings stack easily, little storage space is required. One design of casting interchangeable for all size mills also simplifies records.
6. Reduced Costs in Liner Inventory—standardization is possible because one design fits all diameters of mills. Standardization means quicker unloading and storage.
7. Reduced Costs on Breakage Claims and Delays for Replacements—small castings are rugged and almost impossible to break by handling. Large castings of hard, brittle irons sometimes break in shipment.
8. Reduced Costs in Determining Most Efficient Wear Patterns—you can get wear profiles consisting of all lifter ribs or all flats from the same castings, as well as a combination of both including straight or spiralled lifter pattern.

Liners are supplied in two nominal thicknesses, 1½″ and 3″ with 1½″ high lifters. Castings are 6″ wide x 12″ long. Positive seating of small castings on mill shell means less breakage of castings under operating conditions. For additional information on B&W Universal Tube Mill Liner Plates write The Babcock & Wilcox Company, Boiler Division, Barberton, Ohio.

B&W

THE BABCOCK & WILCOX COMPANY

BOILER DIVISION

S-471

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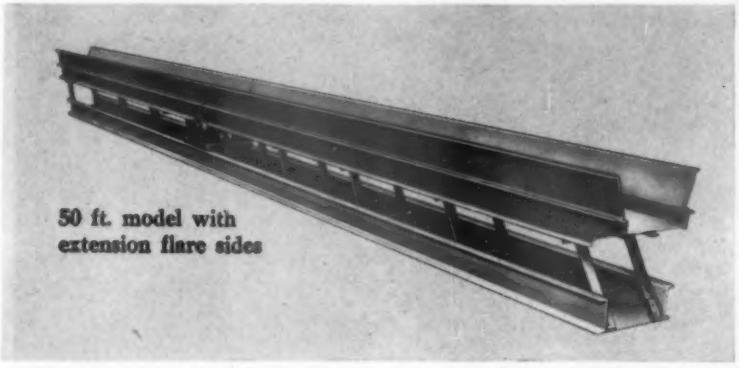
SYNTRON

MECHANICAL

VIBRATING CONVEYORS



50 ft. model with extension flare sides

Lower bulk material handling cost

SYNTRON Mechanical Vibrating Conveyors are multi-purpose units designed for high speed conveying of bulk materials—with modifications their uses are virtually unlimited. They can be used as single units—multiple sections in tandem—combination screen and conveyor for scalping, sizing, dewatering and with heated troughs for drying, preheating, etc.

Each unit consists of two equal length troughs independently mounted on a common base. Motor driven eccentric and drive rod operates each section providing a powerful vibrating action that moves large volumes of material in a uniform, continuous flow.

SYNTRON Mechanical Vibrating Conveyors are available in lengths to meet most requirements. They are easy to install and operate.

Low operating and maintenance expenses keep material handling cost down.

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Other SYNTRON Equipment of proven dependable Quality

VIBRATING SCREENS

GRAVIMETRIC FEEDERS

ROTARY VIBRATOR CAR SHAKERS

DRY FEEDER MACHINES

TEST SIEVE SHAKERS

SYNTRON COMPANY
450 Lexington Ave. Homer City, Penna.

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Smith-Douglass cuts bag costs with WONDERWALL®

Another major user of multiwall bags, the Smith-Douglass Co., Inc., of Norfolk, Va., has reduced bag costs with WONDERWALL, the tougher, cost-cutting new multiwall.

The Company's nine plants are strategically located in the Southeast, Midwest and Southwest, producing substantial quantities of fertilizer, nitrogen and P_2O_5, the latter for use as a phosphorus feed supplement as well as for mixed fertilizer.

"Because the WONDERWALL is so much tougher," states James A. Monroe, (pictured above) Vice President in charge of Operations, "we were able to lower our multiwall bag paper basis weight by 30 lbs.—from 220# to 190#, and secure a saving of $3.50 per thousand. Breakage was reduced, too."

The WONDERWALL is made with Kraftsman Clupak* paper. Its patented, built-in stretch resists impact and greatly increases toughness.

See how the tougher, stronger WONDERWALL can cut *your* bag costs—and reduce bag breakage, too. Just write Multiwall Bag Division, West Virginia Pulp and Paper Company, 230 Park Avenue, New York 17, N. Y.

**Clupak, Inc.'s trademark for extensible paper, manufactured under its authority.*

West Virginia Pulp and Paper

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AMC meeting *continued from page 116*

but application to specific problem areas usually applies to existing facilities.

The basic features of automation include sectionalization of the mining and processing phases. Centralized control panels should be provided for each operating division (see ROCK PRODUCTS, Sept. 1957, pg. 80.) Mr. Doyen discussed the electrical system involved in a good, divisional operating plan, showing diagrams for primary crushing, secondary and tertiary crushing, screen plant and the loading-out sections of the operation.

Biggest rock *continued from page 92*

being defaced by vandals until the recent appointment of a full-time warden to watch the area around the clock. Bill Harney, 60, the Ayer's Rock warden, is an authority on aboriginal folklore.

Apart from the fleeting visits of the tourists to Ayer's Rock, he has the company of two Loritja elders and a few primitive Pitjintara natives who stroll in occasionally from the Peterman ranges to revisit their tribal haunts.

One would think that such a huge rock as Ayer's Rock would be able to take care of itself, but tourists have even damaged beautiful trees in its vicinity and shot harmless native animals.

Mt. Augustus, too, is one day expected to draw tourists and scientists.

Ayer's Rock amazes all its viewers. It is incredible to see the huge rock, twice the size of a city

Please turn to page 122

"THERE'S A ROCK WEDGED BETWEEN THE TIRES—
I WONDER WHERE I PICKED IT UP!"

Winslow TRUCK SCALES

PIT AND PITLESS TYPES

CABINET DIAL

Weight indication available includes ball bearing poise weighbeams, direct reading and weight imprinting types, and dial equipment with or without weight printer.

Write or phone for more information
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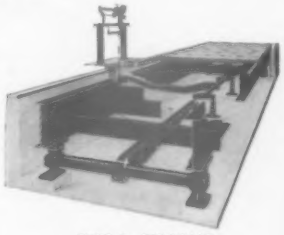
TYPE CS—PORTABLE—PITLESS

Type CS scales, pitless installation, roller bearings, heavy duty, low maintenance. Capacities 15 tons thru 50 tons. Platform sizes 18' x 9' thru 40' x 10', wood or steel deck.



TYPE S—PIT SCALE

Type S scales, pit installation, roller bearings, heavy duty, low maintenance. Capacities 15 tons thru 60 tons. Platform Sizes 22' x 9' thru 60' x 10' for wood or concrete decks.

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SCALE MANUFACTURERS FOR OVER A HALF-CENTURY

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Slurries...handled at lower cost

The new WILFLEY MODEL K Centrifugal Sand Pump embodies important mechanical improvements especially adapted to the handling of cement slurry and results in stepped-up production and substantial power savings. Individual engineering. Write for details.

Buy WILFLEY for Cost-Saving Performance

A. R. WILFLEY and SONS, Inc.
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WILFLEY centrifugal PUMPS

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ROCK PRODUCTS
THE
RECOGNIZED AUTHORITY
OF THE
NON-METALLIC
MINERALS INDUSTRY

Biggest rock *continued from page 121*

and ten times as high as its building, rising without scree or foothills from the desert.

It is a metamorphosed conglomerate, fine and crystalline in texture. It does not rest on its original horizontal bedding, but is tilted upright.

New quarry *continued from page 79*

is preferable to a permanent installation for several reasons—chief of which is its economy of labor." Another factor dictating a portable plant is that it can be readily moved if a highway job is available anywhere in the locality. This plant can be moved to a different location in the same quarry, be set up and be in operation within two and one-half hours.

Quarry-run stone is loaded to the hopper of the portable plant by a ¾-cu. yd. diesel-powered shovel. Quarry-run stone is fed to a jaw crusher with an apron feeder. The jaw crusher is set for minus 3-in. discharge. This material goes to a single-deck vibrating screen with minus ⅛-in., falling to a finished stone conveyor. Oversize is elevated to a hammermill set for ½-in. discharge. Discharge from the hammermill is returned to the first screen in a closed circuit. This screen has provision for a second deck when pea sizes are to be produced. This plant has provision for a second screen when it is required by specialized work.

A ½-cu. yd. crawler shovel is used for loading quarry-run limestone as well as a rubber-tired shovel employing a 1-cu. yd. bucket. In addition to loading, the rubber-tired machine is also used for general utility in the finished stockpile area.

Many private farm trucks as well as common carriers call at the quarry for anywhere from one to 20-ton loads of agstone. In addition to this, the company maintains a fleet of nine spreader trucks, six 13-ton tandem axle and three 7-ton single-axle units. A 26-ft. platform truck scale is maintained at the quarry site.

The major share of agstone spreading contracts filled by this quarry come through the local conservation office. The nine spreader trucks travel over a three-county area on practically a year-round basis. The spreader trucks were able to operate throughout the winter of 1957-58 when there was comparatively little snowfall.

MAJOR EQUIPMENT REFERENCE

Portable plant .....Lippman Engineering Works
Diesel engine, 350-hp. .....Cummins Engine Co., Inc.
Crawler shovel, 1-cu. yd. .....The Frank G. Hough Co.

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Core Drill Contractors for more than 60 years
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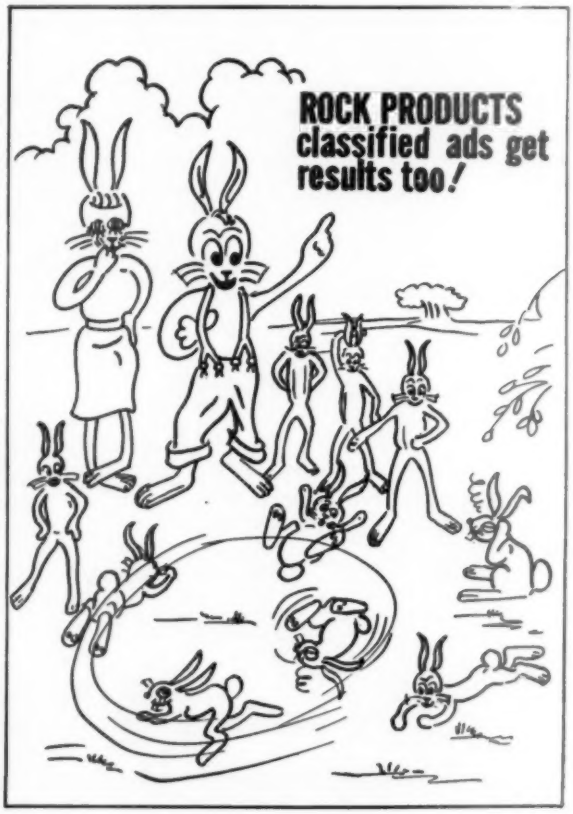

3 new Deister Screens at National Lime's New Buckland Plant

At Buckland, Ohio, The National Lime and Stone Company's new plant has just completed its first year of operation. It is one of the most modern and efficient plants of its size in the country.

Expert plant engineering enables this versatile plant to produce any combination of sizes from three inches down to ag-lime. To meet peak demands, an unusual combination of split chutes permits maximum recirculation of material for secondary processing.

All three screens installed in the new plant are Deister Vibrating Screens. The Number 1 screen—a Deister type UHS, triple deck 4′ x 10′—takes the entire load from the primary crusher. It is equipped with 3-inch, 1 3/4-inch and 7/8-inch wirecloth. Secondary screening is handled by a Deister type UHS triple deck 4′ x 12′, equipped with 1-inch, 7/16-inch and 3/16-inch wirecloth.

A high-speed type USL Deister Ag-Lime screen can produce up to 25 tph when required.

The know-how accumulated by one of the nation's oldest and largest continuous producers has been demonstrated in the design of this plant. Probably that is why superintendent Earl Adams can say, "When the plant opened, we pushed the button . . . and everything worked perfectly. We've been doing the same thing everyday . . . with no breakdowns. No screen adjustment has been necessary on our Deister machines."

Deister Type UHS triple deck 4′ x 10′ number one screen in National Lime and Stone Company's new Buckland, Ohio plant.

Remember, Deister's exclusive Opposed Elliptical Throw assures closer separation . . . higher capacity. Deister's Lifetime Unitized Vibrating Mechanism, featuring Oil Mist Lubrication and extremely rugged construction, assures steady, dependable performance.

DEISTER MACHINE CO.
1933 E. Wayne St., Ft. Wayne, Ind.

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in the cement and gypsum industries

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2. improved beater design
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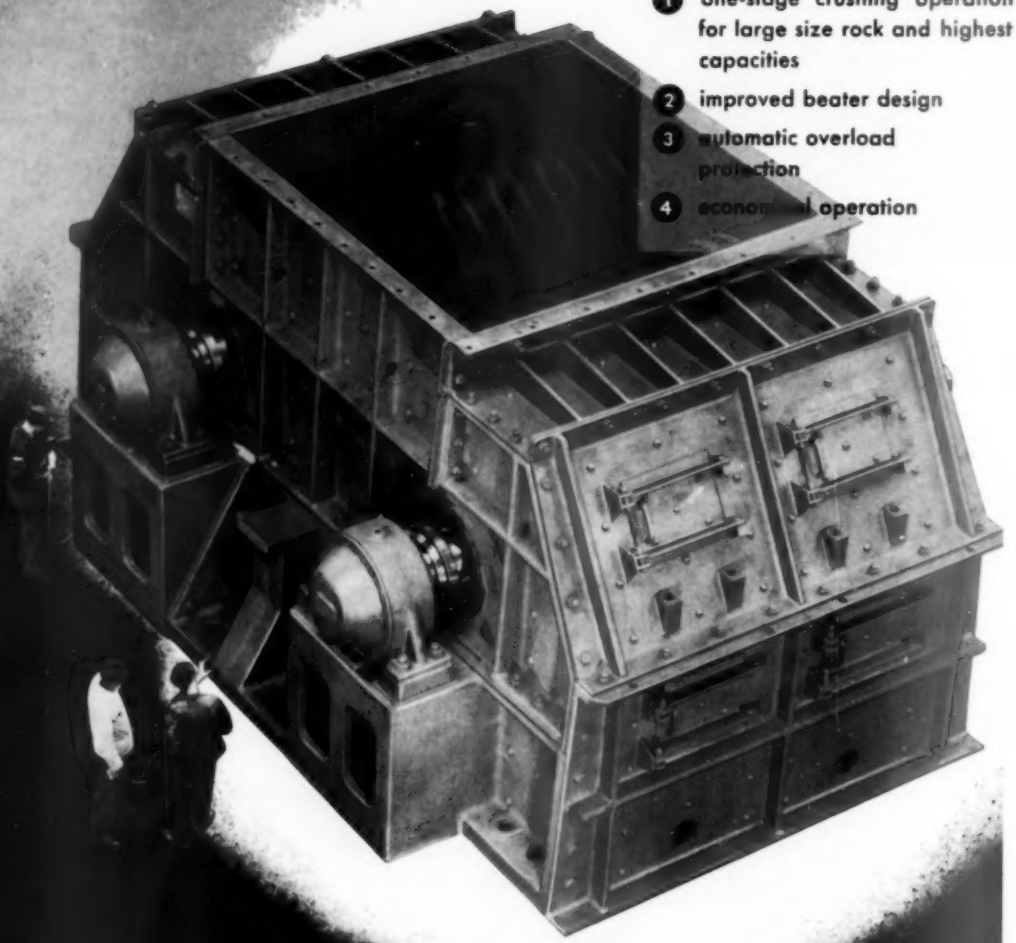

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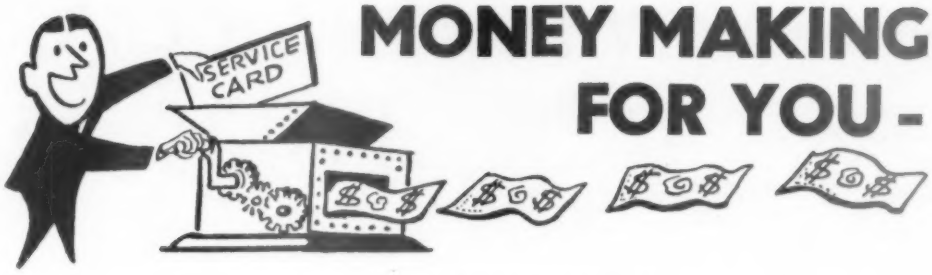

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3. **New Literature**

How to use:

Each advertisement in this issue is provided with a key number, so is each new machinery and new literature item. For more information on any of these items simply fill in the key numbers in the appropriate space on the adjoining card and send it to us. We'll do the rest.

Model R-27 has 4-speed Torqmatic Drive with converter lock-up . . . 336 h.p. engine . . . 18 cu. yds. struck capacity . . . 54,000 lbs. rated payload . . . standard or quarry body.

Rock Bottom Hauling Costs with Euclid Rear-Dumps

THE simple but rugged design of Rear-Dump "Eucs" has provided cost cutting performance in mines and quarries for over 25 years. This unmatched experience in building dependable off-highway haulers, combined with continuous product improvement and excellent dealer facilities for parts and service, results in high job availability and low maintenance cost.

Euclid's line of rear-dump haulers for mine, quarry and construction work is the most complete in the industry. With standard or quarry bodies, there are models with 10, 15, 18, 22, 27, 40 and 55 ton payload capacities . . . engines from 128 to 670 total h.p. . . . 5 and 10-speed transmissions and Torqmatic Drives. For close quarter work there are three over-hung engine models with semi-trailers of 12, 22 and 35 ton capacities.

Have the Euclid dealer in your area give you complete information on the models that fit your requirements. He can show you how "Eucs" cut hauling costs and bring a better return on your investment.

EUCLID Division of General Motors, Cleveland 17, Ohio

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

Enter 1433 on Reader Card

NEW

LITERATURE

Air compressors

THE PENNSYLVANIA PUMP & COMPRESSOR CO. has released Bulletin 350 that describes and illustrates the 3-AT compressor as a horizontal, water-cooled, single-stage and heavy-duty compressor. The bulletin states that the compressor is designed for use in almost nine out of ten compressed air applications. Photographs, line drawings and artists' cross-sectional views fully illustrate the machine.

Enter 700 on Reader Card

Torque-flow pump

WESTERN MACHINERY CO. has just issued a 4-page bulletin that explains the varied industrial applications of its non-clog torque-flow pump. A radical new design principle incorporated in this pump makes it non-clog, abrasion resistant, yet gentle enough for delicate materials. The bulletin illustrates the pump's use in the coal, pulp and paper, and chemical industries.

Enter 701 on Reader Card

Locating subsurface sand

THE ASSOCIATED RESEARCH INC. has published Bulletin 1-60.2 that tells how to operate a portable instrument that locates subsurface sand and gravel, investigates bridge sites and similar subsoil conditions important in highway, bridge and building construction. Called the "Michimho Vibroground," it gives direct readings of earth conductance to determine soil contour profiles. It details the type, location and depth of individual soil layers without test boring.

Enter 702 on Reader Card

Automatic sand classifying

THE MECKUM ENGINEERING, INC. has published a fully illustrated booklet about their automatic sand classifying system. The system has the ability to operate from feed to stockpile by automation without high cost accessory equipment such as screws, drags, wheels or conveyors. The system is illustrated by 27 photographs.

Enter 703 on Reader Card

Vibratory feeders

THE SYNTRON CO. has published an amply illustrated 32-page catalog that details data and specifications on the company's complete line of six small-capacity feeders. The line also includes four heavy-duty and three extra-heavy-duty vibrated feeders, all of which are electromagnetic. It also presents information on three pneumatic and hydraulic vibrated feeders.

Enter 704 on Reader Card

Conveyors

THE STEPHENS-ADAMSON MFG. CO. has issued Volume 220 that features and illustrates stories of the uses of their line of conveyor belts. The company, responsible for building the world's longest grain belt conveyor, has placed its conveyors in various uses around the country. Each use is completely illustrated.

Enter 705 on Reader Card

Tractors and tractor units

THE EIMCO CORP. has announced the publication of a 16-page booklet covering their 105 Series of tractors and tractor units. Included are full color pictures of the 105 tractor-dozer, the 105 excavator, excavator-dozer combination, the 115 special steel mill excavator and the 125 front-end loader. Also featured is the "Unidrive" transmission.

Enter 706 on Reader Card

Sprockets and Idlers

THE CATERPILLAR TRACTOR CO. has published Booklet D868, an 8-page booklet, "Power and Guidance." It illustrates various design characteristics and manufacturing processes.

Enter 707 on Reader Card

Scraper blade

INTERNATIONAL HARVESTER CO. has published Booklet CR-177-1, called "Here's the Inside Story on Cutting Edges." It explains how operators can use the company's blades that are produced by a special heat-treating process and have a hardened surface.

Enter 708 on Reader Card

Micropipettes

THE STANDARD SCIENTIFIC SUPPLY CORP. has published a 1-page story about their line of pipettes. All have brand capillary tubing with "ceramic" type and all are fired on permanent graduations. All tips are ground smooth. Six of the pipettes are illustrated by line drawings.

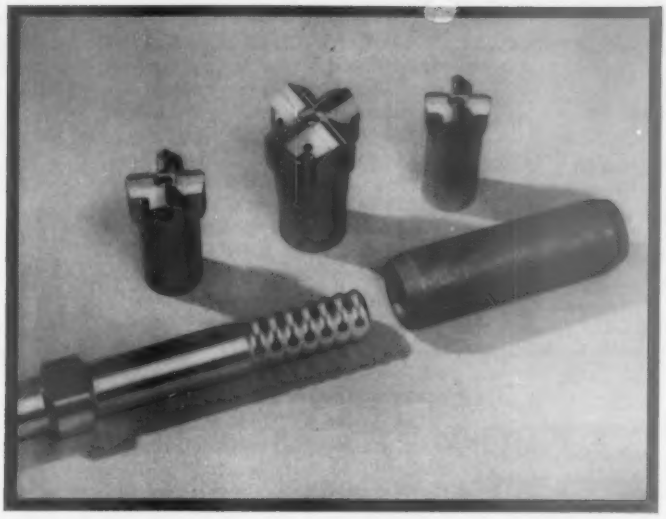
Enter 709 on Reader Card

20 kw. electric plants

JETA, INC. has published a 2-page bulletin that describes their new line of 20 kw. electric generating plants. It includes specification for the units plus a listing of optional accessories available with all company plants.

Enter 710 on Reader Card

(Continued on page 130)



Here's proof Coromant rope-thread bits and steels SAVE TIME AND MONEY

"Up to double the footage between sharpenings!"
"Premature rod breakage is almost non-existent!"
"40% more usable life—more resharpenings!"
"Bit and rod life are well above average!"
"Uncouple by hand all the time!"
*"More rigid—drills straighter holes!"**

**Names of men quoted available on request*

The comments above are actual quotes from project managers, job superintendents, and drill superintendents who have tested new Coromant rope-thread bits and steels. They've learned, on-the-job, the benefits they—and you—can expect!

For example: The new rope-thread (only two turns per inch) holds tight in use, yet permits hand uncoupling. Reports show that the time saved results in more footage drilled per shift. Bit footage is well above average too, with less loss of carbide inserts. Prime quality ore plus nickel-chrome alloy permits cold-rolling from billets for greater strength, life and rigidity. And only with Coromant rope-thread steels can you re-thread without heat treating, too. Do it yourself, or at any nearby machine shop.

Want to know more? There's no obligation on your part, but we'll be glad to help where we can. Just call your nearest Atlas Copco Office, or write to us at Dept. RP-7.

Atlas Copco

610 Industrial Avenue
Paramus, New Jersey
COlfax 1-6800

930 Brittan Avenue
San Carlos, California
LYtell 1-0375

Enter 1467 on Reader Card

NEW LITERATURE

(Continued from page 128)

Portable washing and screening plant

IOWA MFG. CO. has issued a bulletin that describes their Wash-All Junior plant. With a capacity of 50 to 100 tons per hour, this plant includes a 36-in. x 8-in. triple-deck horizontal vibrating screen with spray bars. It also has a 24-in. x 21-ft. single-screw washer-classifier dehydrator.

Enter 711 on Reader Card

Materials handling equipment

SYNTRON CO. has published a catalog describing parts handling equipment, power rectification equipment and mechanical shaft seals. Also explained are paper joggers and portable construction tools.

Enter 712 on Reader Card

Screw conveyor drive

THE DODGE MFG. CORP. has published a 16-page bulletin that describes a screw conveyor drive complete with speed reducer, packing gland and drive shaft. These mount as a unit on a trough end. The drive is precision built with housing bored in line to receive bearings for ample thrust and radial capacity. Triple seals prevent contamination. Units may be mounted in any position. *Enter 713 on Reader Card*

Motor starter

THE RICHARDSON SCALE CO. has issued Bulletin 58-C that details the advantages of centralizing motor starters in control panels. The bulletin cites the savings in initial costs, wiring, engineering time and reduced maintenance costs. Six photographs of motor starter centers are included.

Enter 714 on Reader Card

Hose fittings

HOSE ACCESSORIES CO. has issued Catalog 34, containing data on its couplings and fittings for industrial rubber hose. *Enter 715 on Reader Card*

60-ton truck crane

MANITOWOC ENGINEERING CORP. is distributing a brochure on its Model 2900 truck crane with 60-ton capacity. Features include unrestricted highway travel, sturdy frame and quick convertibility from dragline to clamshell crane. *Enter 716 on Reader Card*

Centrifugal separations

DORR-OLIVER INC. announces the availability of a new 16-page bulletin, "Merco Centrifugal Separations for the Process Industries." The machine, a nozzle-bowl disc type centrifuge, is used for washing, clarification, soluble recovery or classification of liquid-solids mixtures. The booklet describes the design, operation and advantages of separators for five basic liquids-solids applications. Photographs and drawings of individual units are included.

Enter 717 on Reader Card

Vacuum pumps

THE STANDARD SCIENTIFIC SUPPLY CORP. has released a 1-page description of its 75 liters per minute Model 75 vacuum pump. The machine has a vacuum to 0.1 micron or better, and it is portable. It is to be used for aluminizing TV tubes, degassing liquids, freeze-drying, depositing films and coatings and distillation.

Enter 718 on Reader Card

Diesel engines

DETROIT DIESEL ENGINE DIVISION, GENERAL MOTORS CORP. has released a 12-page illustrated brochure that details the wide selection of industrial and automotive engines. Entitled "Choose the Power for your Purpose," the booklet gives power ratings and over-all dimensions on over 100 in-line, "V" and turbopower engine models. Fan-to-flywheel and base-mounted power units are included.

Enter 719 on Reader Card

Vibrating screens

THE LINK-BELT CO. has released a 48-page book, No. 2777, describing the 12 different types of 212 sizes of vibrating screens. The book describes and illustrates each of the screens and foundry shakeouts as they are used to meet screening and shakeout needs of industry. Information on screen cloths and accessories, as well as tables of materials, selection data and drawings is included. *Enter 720 on Reader Card*

Replacement parts for crushers

THE COLUMBIA STEEL CASTING CO. has released a 4-page bulletin explaining their line of replacement parts for crushers, shovels, tractors, buckets, mining and ore processing. The company specializes in industrial components for manganese steel and steel alloy. A brief history of the company and photographs of the product are included. *Enter 721 on Reader Card*

Pumps

CONSTRUCTION MACHINERY CO. has released Bulletin CP-56, describing its line of centrifugal and diaphragm pumps. They include the automatic-priming, self-cleaning Dual Prime Pump line, available in capacities ranging from 4,000 to 240,000 gph.

Enter 722 on Reader Card

Electronic weighing

THE STREETER-AMET CO. has just reprinted a 12-page booklet on "Industrial Weighing Through Electronics." It explains the history and development of electronic weighing, the theory of operation, instrumentation and remote recording. In addition, a 6-page brochure, "The Way to Weigh," which contains photographs of weight recording equipment and applications, is enclosed. *Enter 723 on Reader Card*

Air compressors

FULLER CO. has issued a technical reprint called "What Every Plant Engineer Should Know About Air Compressors." Included are a list of questions to help solve operational problems and a list of frequent hazards and safety precautions, plus an air consumption table for various equipment. A list of reference books on air compressors is also given.

Enter 724 on Reader Card

Lab clamps

THE STANDARD SCIENTIFIC SUPPLY CORP. has published a 6-page brochure about their lab clamps with structo frame connectors and feet. They assemble without tools. The clamps feature bridge-beam cross section and a swivel action clamp holder.

Enter 725 on Reader Card

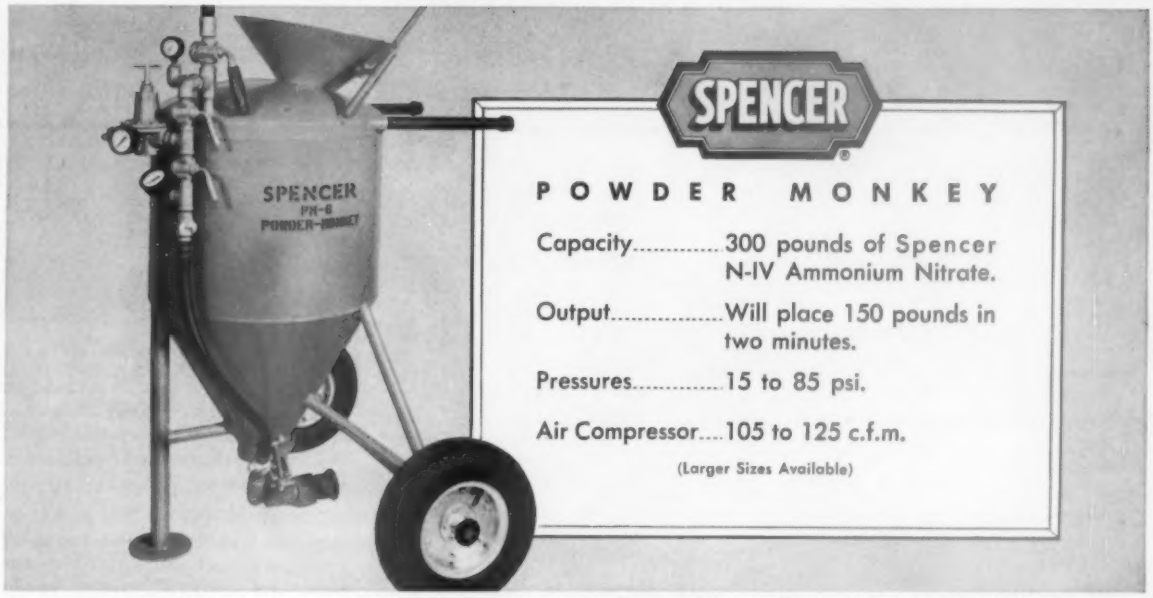
Electric motors

CENTURY ELECTRIC CO. has issued a new 16-page 1959 Motor Application Guide (Form 270 A). The booklet gives typical applications of the firm's motors and shows specifications for each. *Enter 726 on Reader Card*

Electric hoists

THE NORTHERN ENGINEERING WORKS has released a booklet with engineering data about their electric hoists. With 17 illustrations the booklet details the features such as the rolled steel frame, drum, motor and load brake of the hoist. Its various models are also pictured.

Enter 727 on Reader Card END



One man is all it takes to fill horizontal holes with Spencer N-IV Ammonium Nitrate for blasting, when you use the new Spencer Powder Monkey. Available with wheels for towing, or mount on powder truck.

At Last! A Machine For Fast, Easy Placement Of Ammonium Nitrate In Horizontal Blast Holes:

New Spencer Powder Monkey saves you $3.00 to $4.00 per 100 pounds on bag costs alone!

Scientifically designed for placement of Spencer N-IV Ammonium Nitrate in horizontal blast holes, the Spencer Powder Monkey *blows* the prills into the hole. Then the Powder Monkey is filled with sand, which is blown into the holes for stemming.

There's no need for tamping bags, tamping equipment, or the labor needed to fill and tamp bags into the hole!

With the Powder Monkey, you can actually load faster and more economically than with any other known method! Job-tested on holes ranging from 1⅝ inches to 8 inches in diameter, the Powder Monkey has proved itself under a wide variety of conditions.

Another advantage of placing Spencer N-IV with the Powder Monkey is that you can prime the entire charge with detonating cord at the same time you insert the hose in the blast hole for filling.

World's Most Efficient Low-Cost Explosive

Spencer N-IV Ammonium Nitrate produces a superior blast for two reasons: (1) Spencer N-IV has a special structure that lets the prills absorb oil more easily. (2) Spencer N-IV contains a much higher percentage of ammonium nitrate than other brands.

Because of these two advantages, Spencer N-IV produces more energy than competitive grades of ammonium nitrate, yet costs no more!

How N-IV Reduces Priming Costs

With Spencer N-IV, you save on priming costs, too, because it can be initiated with a single strand of 175-grain detonating cord. And you put an end to the danger of storing high explosives on the job site!

Spencer N-IV is available in all-plastic 50-pound bags that are tougher than paper—so tough they reduce breakage as much as 50%. They are so weather-proof you can store them right out in the open! (Also available in paper bags.)

For more information on Spencer N-IV Ammonium Nitrate, or the new Spencer Powder Monkey, tear off and mail the coupon below:

SPENCER

Spencer Chemical Company
405 Dwight Building
Kansas City 5, Missouri

Yes! I want to know more about:

☐ Spencer Powder Monkey
☐ Spencer N-IV Ammonium Nitrate

Please rush information!

Name_____

Firm_____

Address_____

City_____ State_____

Enter 1477 on Reader Card

NEW U.S. PATENTS

OLIVER S. NORTH

Recently issued patents on nonmetallic minerals*

Fluorspar

Canadian 573,209—Method of using **fluorspar** as an adsorbent-replacing ion exchange resins for the separation of rare earth metal values from uranium values in mixed solutions, such as spent fuel solutions from neutronic reactors, ore processing solutions, etc. 35-80 mesh fluorspar is added to the solution, the mixture heated to 100-250 deg. C. and the fluorspar and adsorbed rare earths separated from the residual solution. (to J. D. McAdoo, Jr., H.S. Miller and H. F. Reichard; assigned to Atomic Energy of Canada, Ltd., Mar. 31, 1959)

Clay

2,882,174—Use of **bentonite, ball clay, wollastonite** and **talc** in compositions used for coating alumina rods to be used in the coating of articles by flame spraying. (to N. N. Ault; assigned to Norton Co.)

2,882,211—In a method for removing discoloring impurities such as iron and organic materials from **kaolin** or other clay, the clay is mixed with powdered sulfur, and the mixture mulled and pelletized. The pellets are heated, treated with chlorine gas and washed with water. (to E. A. Autrey)

2,883,307—Use of **bentonite, fuller's earth** and **graphite** in an electrical resistance paint. (to C. Orr, Jr.; assigned to The Georgia Tech Research Institute)

2,883,356—Use of **bentonite** or **kaolin** as an additive in a resin or synthetic rubber composition. (to E. W. Gluesenkamp; assigned to Monsanto Chemical Co.)

2,883,357—Use of modified **bentonite** in the making of high-surface-area metal silicates. (to E. E. Hardy; assigned to Monsanto Chemical Co.)

*Copies of United States patents are available at a cost of 25 cents each from The Commissioner of Patents, Washington 25, D.C. For convenience, coupons, each good for one copy of any patent, may be purchased from that official at the rate of $5.00 per 20-coupon pad or $25.00 per 100-coupon pad.

Phosphate rock

2,881,916—In a two-stage process for drying **phosphate rock** prior to electrostatic and electrodynamic beneficiation, deslimed comminuted ore is heated with agitation to accomplish partial drying, and then directly heated in a moving bed without agitation to reduce the moisture content to less than 0.1 percent. (to C. C. Cook; assigned to International Minerals & Chemical Corp.)

2,878,101—Process for recovery of phosphate and metal values from solutions produced during processing of leached zone material from Florida pebble **phosphate rock** beds. (to D. H. Reeve; assigned to U. S. Atomic Energy Commission)

2,885,259—Recovery of uranium, phosphorous, aluminum and minor values from leached zone material occurring in the Florida pebble **phosphate rock** fields. (to R. F. McCullough; assigned to U. S. Atomic Energy Commission.)

Cement

2,882,033—In a process for making **portland cement** clinker, a fluidized bed of a mixture of coal and the necessary raw materials is ignited as it moves downwardly in a shaft furnace. (to A. R. Smith; assigned to U. S. Steel Corp.)

2,883,173—Apparatus and method for instantaneously preheating **portland cement** raw materials using kiln exhaust gases. Some pre-calcination of particles occurs, thereby reducing dust output from the kiln. (to J. L. Laboulais; assigned to Kennedy Van Saun Mfg. & Eng. Corp.)

2,883,358—A mixture of **portland cement** and petroleum coke is used as a filler in moldable rubber compositions used in the manufacture of strong storage battery cases. (to D. P. Gentry and C. R. Shepherd; assigned to General Motors Corp.)

2,884,334—Use of a mixture of **portland cement,** cellulose xanthate and **lime** as the cementing component in a soil-cement composition. (to G. W. Meadows; assigned to E. I. du Pont de Nemours & Co.)

2,885,157—Design for a preliminary crushing mechanism for incorporation in and with a reciprocating grate type **portland cement** clinker cooler conveyor. Oversize clinkers are reduced to a size desired for subsequent storage and finishing. (to H. V. Fegely; assigned to The Monarch Cement Company)

Aggregates

2,884,380—Method of making a molded thermal insulating material comprising 45-94 percent expanded **perlite** or exfoliated **vermiculite,** 5-20 percent **bentonite,** up to 15 percent **asbestos** fiber and 1-20 percent organic binder. The product is useful for insulating pipes, stills and other chemical processing equipment. (to H. A. Cook, R. E. Fleming and R. H. Heilman; assigned to The Philip Carey Mfg. Company)

Asbestos

2,882,997—Method of making an aerosol filtration media consisting of staple asbestos, asbestos powder and a thermoplastic fiber. (to S. B. Smith and A. J. Juhola; assigned to Pittsburgh Coke & Chemical Co.)

2,883,040—Use of **asbestos** fiber in the manufacture of a lime-bound porous filler mass for use in containers used to store dissolved acetylene. (to A. S. Pater and J. W. Houser; assigned to Union Carbide Corp.)

2,883,352—Use of **asbestos** fiber and **kaolin** in a synthetic resin base molding composition used for making lamp base and socket parts. (to O. Sorge; assigned to Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen m.b.H.) END

Enter 1409 on Reader Card

How 2 cu. yd. Trojan handles all loading operations for Midland, Texas Plant.

Replacing another tractor shovel, this Trojan 154 gives a production boost to the ready-mix plant of West Texas Concrete Products, Inc. The precision control, fast travel speed and high capacity allow it to keep the batcher loaded and still handle truck loading, stockpile maintenance and other chores around the plant.

Trojan 154 digs in, moves material and charges batcher on a fast, continuous cycle.

Your TROJAN distributor can help you with the many advantages of YALE Financing plans, the most complete ever offered to equipment buyers . . . TIME PAYMENTS, LEASING PLANS (with or without OPTION TO PURCHASE) . . . exactly what you need to finance your new TROJAN machines.

TROJAN®
TRACTOR SHOVELS
YALE & TOWNE

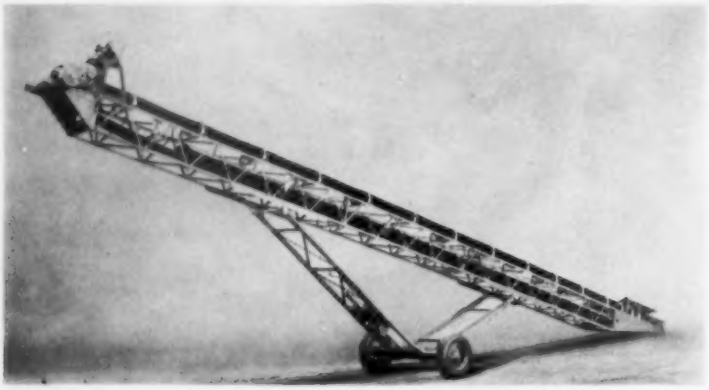
TROJAN 154 BETTERS RATED CAPACITY—PROVES "INDISPENSABLE" IN READY-MIX PLANT OPERATION

High capacity and precision control were the features that sold West Texas Concrete Products, Inc. on the Trojan 154. They needed a fast operating machine with the ability to dump exact amounts of material into the batcher. This was no problem for the Trojan 154. . . . But they required a machine with a 2½ cu. yd. capacity. A trial of the 2 cu. yd. model 154 proved that the Trojan could better its rated capacity by ½ yd. load after load, day after day, and still maintain work cycles fast enough to allow it to handle other jobs around the plant area. "The Trojan 154 is a fast loading, fast travelling machine." says Mr. John Marlow, Plant Superintendent of the Midland, Texas Plant. "Its part in boosting the speed of our operation has meant considerable savings for us."

A loading operation for the Trojan tractor shovel involves carrying 6,000 lbs. of rock, 8,000 lbs. of regular sand and one load of fine sand — dumping the correct amounts into the batcher and returning the surplus to the stockpile. The batcher, in turn, dumps the mixture into the ready-mix truck. The fast loading cycles of the Trojan 154 help to complete this entire operation in six minutes.

TROJAN DIVISION, THE YALE & TOWNE MANUFACTURING COMPANY, BATAVIA, NEW YORK, SAN LEANDRO, CALIFORNIA

NEW MACHINERY



Heavy-duty portable conveyors in 3 belt lengths

THREE ENTIRELY new units have been added to this company's line of portable belt conveyors. New from the ground up, these heavy-duty units offer the ultimate in capacity, portability, versatility and low cost. These highly versatile conveyors may be used for stockpiling, truck loading, charging hoppers and bins, pouring wet concrete, feeding crushers, screens, dryers and a wide variety of other applications according to the manufacturer.

Available in belt widths of 18, 24, 30 and 36 in. and in lengths from 33 to 60 ft. in 3-ft. increments, the new conveyors are offered in three different models, depending upon the type of drive. A complete line of accessories is available for these conveyors including power hydraulic boom hoist, towing hitch, belt scraper, swivel-wheel truck, lagged pulleys, and swivel spout. *Barber-Greene Co., 400 No. Highland Ave., Aurora, Ill.*

Enter 300 on Reader Card

Portable rotary compressor with automatic drainage

"COMPLETELY NEW from the ground up and backed by 10 years of rotary field experience" . . . states the maker of a recently announced 125-cfm. Gyro-Flo portable rotary compressor. Smaller and more compact than the original model, the new unit incorporates many proven Gyro-Flo design features plus new features which are the result of extensive research, performance evaluation and customer suggestions.

Some of the features listed by the manufacturer for the new Gyro-Flo 125 are: simplified, more efficient compressor system; automatic drainage of oil from cylinders when unit is shut down; larger, more-powerful engines; slower speed; and safety shutdown on compressor. The new portable is 10 ft. 1 in. long, including drawbar, 5 ft. 1½ in. high, 5 ft. 8¾ in. wide and weighs 2,442 lb. *Ingersoll-Rand Co., 11 Broadway, New York 4, N.Y.*

Enter 301 on Reader Card

Economy loader

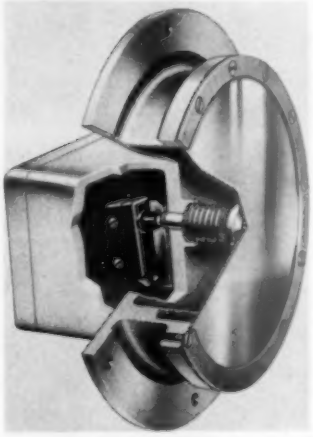
A NEW ECONOMY LOADER, designated as the L-100 Series, has been added to a line of earth moving equipment. The new unit has been designed for mounting on utility tractors and has a breakaway capacity of 2,500 lb.

Adaptor brackets are provided to mount the L-100 Series on International Harvester 240 and 340, Allis-Chalmers D-14, John Deere 430W and 430U, Ford 600-800, Ferguson 35, Massey-Ferguson 202, Oliver 550 and Case 310 tractors. *Henry Manufacturing Co., Inc., P. O. Box 521, Topeka, Kansas.*

Enter 302 on Reader Card

Bin level indicator

A NEW, AUTOMATIC bin level indicator is being introduced. The new indicator is a super-sensitive response mechanism effective for use with light materials without affecting its performance with heavy materials. It is offered in both standard and explosion-proof models.



The new indicator, named the Auto-Bin-Dicator, is the newest in a series of automatic control devices for bulk material handling which the company has been making for nearly a quarter of a century. The entire body is heavy aluminum castings and the diaphragm is stainless steel. It is corrosion resistant, even when it is installed in a suspended central position in the bin, completely enveloped by material.

The new unit can be affixed to thick or thin walled bins, or suspended within the bin, hopper or silo at any desired level through the use of a simple extension. It also can be used in chutes and hoppers to prevent choke-ups, overfeeding and damage to machinery. *Bin-Dicator Co., 13946- 163 Kercheval, Detroit 15, Mich.*

Enter 303 on Reader Card

(Continued on page 136)

"In plant" service records prove

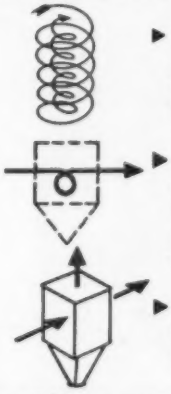
For Centrifugal Collection of Kiln Dust...

NOTHING EQUALS THE 24 IH MULTICLONE

That's a big statement—

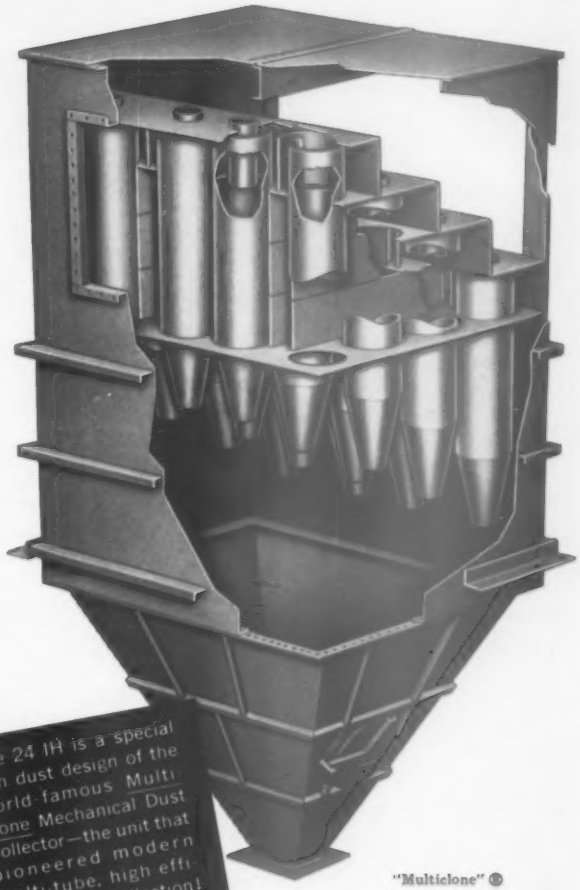
but the proof behind it is even more impressive

The 24 IH has over 7 years of actual plant service behind it—not just one or two installations, but in a wide range of cement plants in all parts of North America with many types of kiln dust collection problems. In one application after another the 24 IH Multiclone Collector has proven to be:



- the most efficient of any mechanical equipment for kiln dust collection because of its high speed centrifugal cleaning action!
- the most trouble-free of any unit, because its straight "in line" flow design and large diameter tubes prevent clogging and costly down time for servicing!
- the easiest to install because its simple cubic design fits new or existing plant layouts!

In addition, convenient rodding holes can be installed in cover and inlet panel to simplify tube cleaning while the unit is in service...and where high sulfate conditions exist, removable outlet tubes can be supplied to cut maintenance costs.



The 24 IH is a special kiln dust design of the world-famous Multiclone Mechanical Dust Collector—the unit that pioneered modern multi-tube, high efficiency dust collection!

"Multiclone" ®

The 24 IH MULTICLONE will give you completely new standards of performance—higher efficiency, lower maintenance, longer life, and maximum adaptability to *your particular* operating requirements!

Our representatives will gladly supply complete details. Or write direct.

WESTERN

PRECIPITATION

CORPORATION

COTTRELL Electrical Precipitators
MULTICLONE Mechanical Collectors
CMP Combination Units
DUALAIRE Jet-Cleaned Filters
THERM-O-FLEX Hi-Temp Filters
TURBULAIRE-DOYLE Scrubbers
HOLO-FLITE Processors
HI-TURBIANT Heaters

Engineers and Constructors of Equipment for Collection of Suspended Material from Gases . . . and Equipment for the Process Industries

LOS ANGELES 54 • NEW YORK 17 • CHICAGO 2 • PITTSBURGH 22 • ATLANTA 5 • SAN FRANCISCO 4

Representatives in all principal cities

Precipitation Company of Canada Ltd., 8285 Mountain Sights Avenue, Montreal 9

Enter 1469 on Reader Card

(Continued from page 134)

New screening plant for producing sized aggregates

THIS ALL-NEW PORTABLE screening plant gives highest capacities and unmatched portability at lowest cost. It is the ideal means of producing sized aggregates for all types of work. The plant screens while it loads, allowing the two operations to be performed simultaneously.

The plant, known as Model PS 70, is ruggedly built for long life under even the most adverse operating conditions. Consisting of a vibrating screen, portable belt conveyor, reciprocating feeder, and hopper or trap for feeding, the plant can be towed from job to job as a single unit, without disassembly. The screen is merely folded under the conveyor for travel. These portable screening plants are available in various sizes to suit every screening requirement. *Barber-Greene Co., 400 No. Highland Ave., Aurora, Illinois.* **Enter 304 on Reader Card**

Aluminum trailer bodies for weight savings

SUBSTANTIAL WEIGHT savings, larger payloads, fewer trips per job, and greater resistance against corrosion are some of the major advantages of a new line of aluminum dump trailers recently introduced. Adaptable to any single or tandem trailer chassis and suitable for transporter and material hauling, the new aluminum body line includes body styles available with or without longitudinals. Specifications call for 3/16 in. sides and floors, 4 in. channel crossmembers and 5 in. I-beam longitudinals.

Aluminum dump trailer bodies are designed for greater weight savings in states where weight laws allow high individual axle weight limits with relatively low gross weight. Aluminum trailer bodies have been thoroughly tested under actual conditions in material hauling applications. *Galion Allsteel Body Co., Galion, Ohio.*

Enter 305 on Reader Card

Steel cable tire

A STEEL CABLE TRUCK TIRE that gives up to 20 percent more mileage than conventional truck tires has been put into production. The new tire, called the "Power Express Steel Cable," uses steel cords to reinforce the rubber carcass instead of the textile cords used in conventional tires.

Thirty-nine high-tensile-steel filaments .0058 in. diam. are twisted to form each of the hundreds of cords in the tire carcass. Each of the cords has a minimum tensile strength of 355 lb., giving the tire unusually great strength and stability.

The two-ply steel cable tire will reduce the incidence of flats from punctures by as much as 90 percent.

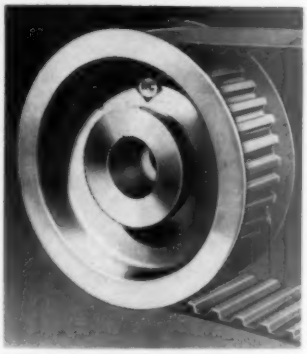
The steel cable tire can be used on both front and rear wheels, but it is especially recommended for front-wheel applications on high-speed trucks where blowouts can be extremely dangerous. Current production of the tire is limited to heavy-duty, tube-type truck tires in sizes 9.00-20, 10.00-20 and 10.00-22. Sizes 8.25-20, 11.00-20 and 11.00-22 will go into production soon. *B. F. Goodrich Tire Co., Akron 18, Ohio.* **Enter 306 on Reader Card**

New front-end loader

A NEW, 2-CU. YD., 4-wheel drive front-end loader called a Lorain Moto-Loader has just been announced. This new model is the result of over two years of manufacturing and marketing front-end loaders. This experience, plus extensive market research, dictated the features incorporated in this new loader.

Operating ranges match today's requirements, and the weight distribution and low center of gravity of the new unit give it an unusual balance for maximum stability to dig and carry maximum loads with no bounce, sway or jiggle. With standard gasoline engine, weight is distributed with 8,200 lb. on the front axle, 10,900 lb. on the rear. Travel speeds are from 3 to 24 mph. A 6-cylinder gasoline engine, 363-cu. in. displacement and developing 105 hp. at 2,200 rpm. is standard. *The Thew Shovel Co., Lorain, Ohio.* **Enter 307 on Reader Card**

Timing belt drive



A NEW SPECIAL timing belt drive constructed with steel cable cords imbedded in neoprene fully molded with nylon-base fabric has been announced. Highly versatile in application, load range and speed range, "Time-Tex" timing belt drives combine the advantages of ordinary V-belt drives with those of chain and gear drives without slip, metal to metal contact, stretch and lubrication. It is suitable for a wide range of load applications—from sub-fractional to 600 hp. with a torque load range from thousands of lb.-ft. down to light loads in oz.-in.

Time-Tex timing belt drives are available in five different "pitches," ⅛, ⅜, ½, ⅞, and 1¼ in. Magic-Grip style TL or QD bushings, as well as minimum plainbores, are available to accommodate various shaft diameters. *Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.* **Enter 308 on Reader Card**

(Continued on page 139)

PRESTRESSED!

Quaker Thermoid Conveyor Belting keeps rolling with the punches

Before it ever comes to you, the heaviest tension you'll put on Thermoid-Quaker Conveyor Belting has already been built in—and then released *after* curing. So the rubber and fabric are really in *compression* when you put the belting to work—ready for the toughest pull without overstraining the yarn or the cover.

There's a Thermoid-Quaker belting designed with just the combination of properties you need for each conveying job. To get the right belting for *your* needs, talk with the Thermoid industrial distributor nearest you, or write to *Thermoid Division, H. K. Porter Company, Inc., Tacony & Comly Sts., Philadelphia 24, Pa.*

Notice how the special ply construction of Thermoid-Quaker "VICTOR" Belting provides greater flexibility at the edges—more shock-absorbing rubber where the worst beating occurs.

THERMOID DIVISION PORTER H.K. PORTER COMPANY, INC.

PORTER SERVES INDUSTRY: with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION, NATIONAL ELECTRIC DIVISION; Copper and Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Electric Furnace Steel—CONNORS STEEL DIVISION, VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION, FORGE AND FITTINGS DIVISION, LESCHEN WIRE ROPE DIVISION, MOULDINGS DIVISION; and in Canada, Refractories, "Disston" Tools, "Federal" Wires and Cables, "Nepcoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD.

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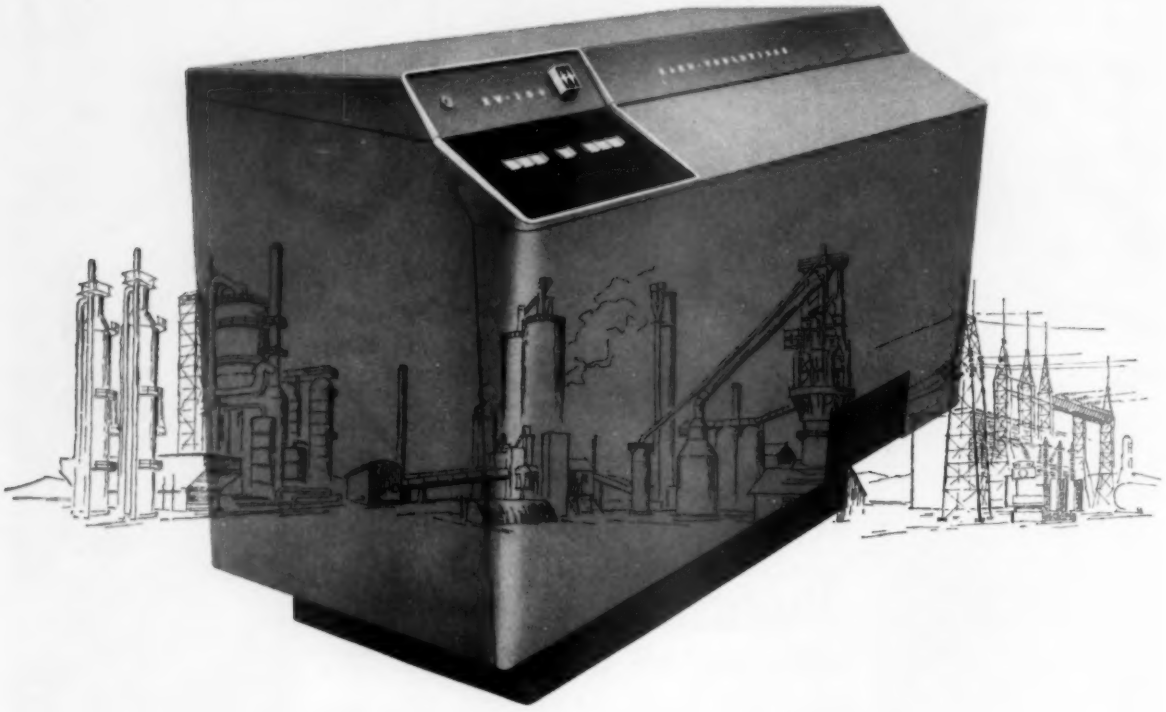
In a Class by Itself

FOR CLOSED-LOOP CONTROL AND AUTOMATIC DATA REDUCTION



The RW-300

DIGITAL CONTROL COMPUTER

OPERATING SYSTEMS incorporating the RW-300 for on-line control and data reduction are demonstrating these tangible benefits: *reduced costs, increased output, improved quality.*

HIGH RELIABILITY, inherent in the advanced design of the RW-300, is being proven by thousands of hours of dependable operation.

SYSTEMS ENGINEERING staff, experienced in the analysis of complex control and data reduction problems, is assisting industry with applications of the RW-300 in chemical, petroleum, steel, cement, electric power, and other fields.

NATION-WIDE SERVICE organization is providing skilled maintenance for this completely developed, production engineered, and thoroughly tested piece of *industrial* equipment.

For further information, call or write: Director of Marketing, The Thompson-Ramo-Wooldridge Products Company, P.O. Box 90067 Airport Station, Los Angeles 45, California, OSborne 5-4601.

THE THOMPSON-RAMO-WOOLDRIDGE PRODUCTS COMPANY

a division of ***Thompson Ramo Wooldridge Inc.***

Enter 1471 on Reader Card

NEW MACHINERY

(Continued from page 136)

Speed reducers

A NEW LINE of shaft-mounted speed reducers is designed for a great variety of speed reduction needs. The new units are available as single-reduction drives in 6 sizes, with nominal ratios of 5 to 1 and capacities up to 50 hp., and as double-reduction drives in 7 sizes, with nominal ratios of 15 to 1 and capacities up to 40 hp.

The new speed reducers can be mounted at angular as well as horizontal positions by using either tie-rod or foot mountings. Lubrication is assured by oil spray generated automatically through gear rotation, regardless of the position in which the reducer is mounted. Housings and bearing seals keep oil in and dirt out.

The new units are furnished with key for hollow shaft sizes and with bushings, complete with key for driven keyseat. *Belt Co., Prudential Plaza, Chicago 1, Ill.* **Enter 311 on Reader Card**

New 18-ton crane

A NEW, 18-TON Moto-Crane has been announced and is now available through a network of distributor outlets. This new 6 x 4 rubber-tire crane provides big capacity at a highway travel weight that is legal in most states.

Utilizing a brand new 180-in. long carrier with stronger box-section side rails, 43 mph. highway speed and rocker arm bogie construction, the MC-218 has mobility and sturdiness.

The unit is fully convertible to shovel, crane, clamshell, dragline and hoe. The turntable can be mounted in two positions on the carrier for either maximum crane capacities or for best digging ranges. This position change can be made easily on the job. *The Thew Shovel Co., Lorain, Ohio.*

Enter 312 on Reader Card

Rotary drill

A NEW MEDIUM-SIZED heavy-duty rotary blast hole drill—the model 30-R—has been introduced. The new rig will drill 6¼ to 7⅞-in. diam. blast holes.

This ruggedly-built drill is available either on crawler or truck mounting, or on truck mounting with power take-off from truck engine. Down-the-hole tools are available for all three units.

The rack and pinion cable pull-down is capable of exerting a force of 30,000 lb. on the bit. The bull reel can be operated mechanically from the power unit to give a maximum hoisting speed of 113 fpm. and a maximum hoist pull of 29,500 lb. Hydraulic cylinders allow for the rapid raising and lowering of the 36-ft. 3-in. derrick.

Cuttings are removed by air bailing and are piled adjacent to the hole for later use as stemming material. Air for rotary drilling is supplied by a single-stage 667-cfm. compressor. A two-stage compressor is available for down-the-hole drilling. Dust control is effectively maintained. *Bucyrus-Erie Co., So. Milwaukee, Wis.*

Enter 313 on Reader Card

New 40-ton carrier

A NEW 40-TON CAPACITY CraneMobile is available. Known as model 610-T8440, the 8 x 4 carrier features removable outrigger beams and supports, durable-duty air brakes on all wheels and power steering. A variable speed transmission gives 12 speeds forward and 3 in reverse. Front axle clearance is over 13 inches.

The 610-T8440 can easily lift and walk with a 63,000-lb. load, and can handle 5,000 lb. over the rear on 150 ft. of boom at 100 ft. radius. The machine is convertible and may be used as crane, clamshell, dragline or pile driver. *Bay City Shovels, Inc., Bay City, Mich.* **Enter 314 on Reader Card**

(Continued on page 140)

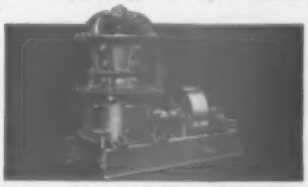
NO MAJOR REPAIRS IN 25 YEARS*

Sturtevant Construction Assures Long Mill Life at Top Loads

Sturtevant crushing and grinding machinery answers the long life top-load production problem for medium to small size plants. Many Sturtevants have been operating above rated capacities for more than 25 years, and *without a major repair.*

"Open-Door" design gives instant accessibility where needed — makes cleanouts, inspection and maintenance fast and easy. Machines may be set up in units to operate at equal quality and capacity.

Jaw Crushers — Produce coarse (5 in. largest model) to fine (⅛ in. smallest model). Eight models range from 2 x 6 in. jaw opening (lab model) to 12 x 26 in. Capacities to 30 tph. All except two smallest sizes operate on double cam principle — crush double per energy unit. *Request Bulletin No. 062.*



Rotary Fine Crusher — Reduce soft to medium hard 3 to 8 in. material down to ¼ to 1¼ in. sizes. Capacities up to 30 tph. Smallest model has 6 x 18 in. hopper opening; largest, 10 x 30 in. Non-clogging operation. Single handwheel regulates size. *Request Bulletin No. 063.*

Crushing Rolls — Reduce soft to hard 2 in. and smaller materials to from 12 to 20 mesh with minimum fines. Eight sizes, with rolls from 8 x 5 in. to 38 x 20 in.; rates to 87 tph. Three types — Balanced Rolls; Plain Balanced Rolls; Laboratory Rolls — all may be adjusted in operation. *Request Bulletin No. 065.*

Hammer Mills — Reduce to 20 mesh. Swing-Sledge Mills crush or shred medium hard material up to 70 tph. Hinged-Hammer Pulverizers crush or shred softer material at rates up to 30 tph. Four Swing-Sledge Mills with feed openings from 6 x 5 in. to 20 x 30½ in. Four Hinged-Hammer Pulverizers with feed openings from 12 x 12 in. to 12½ x 24 in. *Request Bulletin No. 084.*

**Reports Manager W. Carleton Merrill concerning Sturtevant Swing-Sledge Mill at James F. Morse Co., Boston.*

STURTEVANT
MILL COMPANY
102 Clayton St., Boston 22, Mass.

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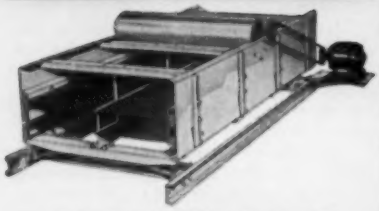

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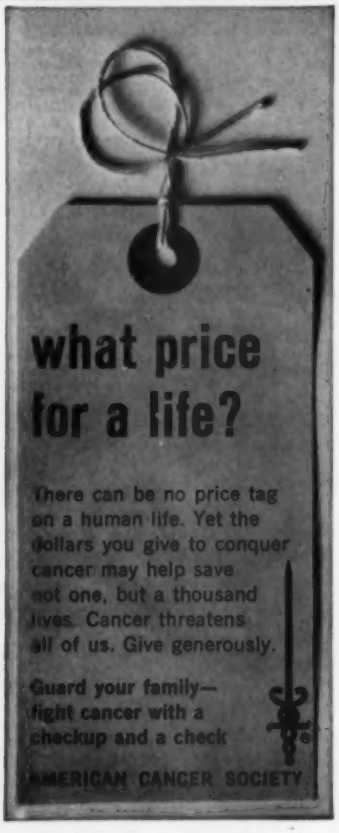
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There can be no price tag on a human life. Yet the dollars you give to conquer cancer may help save not one, but a thousand lives. Cancer threatens all of us. Give generously.
Guard your family—fight cancer with a checkup and a check
AMERICAN CANCER SOCIETY

NEW MACHINERY

(Continued from page 139)

Lightweight, economical core drill

SIMPLICITY IS the outstanding feature of this new core drill. The compact unit consists of three basic assemblies—5½ hp., 2-cycle air-cooled engine; circular holding ring with controls; and sealed gearbox transmission to give 2,000 rpm. maximum speed.

Dynamic balance and high cutting speed enable the Winkie to outperform other drills operating under equal operating conditions. This diamond core drill can recover cores from 15/16 in. diam. at about 200 ft. deep to 6¼ in. diam. and 25 ft. deep, and can operate at any angle, according to the maker. *Bucyrus-Erie Co., Drill Div., Richmond, Ind.* **Enter 315 on Reader Card**

Nuclear depth controller

A CONTROLLER which automatically regulates clinker bed depth in air-quenching coolers to substantially improve kiln operation and reduce cooler maintenance has been developed. The new package controller levels the depth of clinker bed on the cooler grates. This results in stabilized temperature of secondary air going to the kiln and more constant and lower excess oxygen in the exit gasses. Where the control is used, there has been a corresponding increase in kiln capacity and/or fuel savings, according to the manufacturer.

A nuclear source radiates through the cooler and indicates the depth of clinker on the cooler grates. Irregular clinker discharge from the kiln causes the bed depth to rise or fall below predetermined levels, and this information is passed from a receiver to a recording-controlling potentiometer. *Allis-Chalmers Mfg. Co., Milwaukee 1, Wisconsin.* **Enter 316 on Reader Card**

Cyclone separator

LARGEST OF A newly designed series of cyclone separators being introduced is the Model 36, a cyclone which operates in the 4,000 to 6,000-cfm. range. This supplements other recently announced models in the range of 2,000 to 4,500 cfm.

The new Model 36 features adjustable belt drive to give a wide range of performance against varying resistances. Its long tapering cone design and high inlet velocity make it a "high-efficiency" cyclone.

In the new unit the blower is mounted either on the clean air side of the collector or separately. This prevents fan damage from bulky dust, large chips or tramp material or other foreign substances. These are deposited in the collector base before air reaches the blower. It has 14-in. inlets and outlets and the standard base has 30-cu. ft. storage capacity for dust, emptied through an airtight slide gate. The unit occupies 44 x 70½-in. floor space and measures 13 ft. 9⅜ in. from hopper outlet to top. A protective weather cap and weather-resistant finish are available for outside installations. *Torit Mfg. Co., Walnut & Exchange St., St. Paul, Minn.*

Enter 317 on Reader Card

(Continued on page 143)

PRIMARY PLANTS: Use with Intermediate and Secondary Plants or alone for producing ballast. Jaw crushers 1524 to 3042 in size. Choice of portable apron or built-in feeder. Some have scalping screen ahead of crusher.

IN-LINE GRAVEL PLANT: Extra large capacity with low weight. Meets most highway load limits. Has 1036 jaw crusher, 30" x 24" rolls, 4' x 12' — 2½ deck vibrating screen . . . yet weighs only 55,900 lbs. on the road!

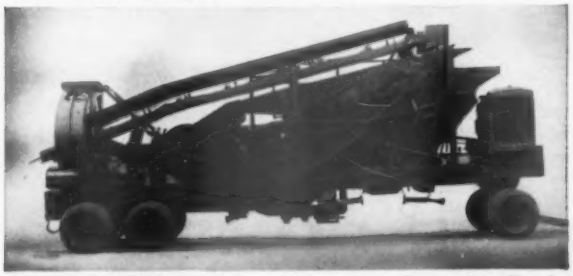
INTERMEDIATE PLANTS: Used with Primary and Secondary Plants to increase flexibility of operation and boost output. Meets highway height, width, and weight limits. Models offer choice of either jaw or roll crusher.

SECONDARY PLANTS: 4 models of Secondary Plants offer choice of 3018, 4022, and 5424 twin roll crushers or 4022 triple roll crusher with 3' x 10', 4' x 10', or 4' x 12' — 3½ deck vibrating screens.

For men who like to underbid their competitors . . . (and make a nice profit, too)

Pioneer Portable Crushing Plants

BOTTOM DECK FEED PLANTS: Exclusive method of routing material through plant gives *twice* the effective screening area of conventional plants, also lets operator equalize load between jaw and roll crusher while plant is operating. These and other features, give extra capacity and unusual control of gradation. Four models.



44 AND 45 SERIES: Full deck sand screen rejects fines and small rock bypasses jaw crusher. These and regular Bottom Deck Feed features give extra big capacity. 4 full screen decks and spouting arrangement can produce 4 sizes of material at same time. Electric or mechanical drives.

PIONEER Distributors and PIONEER's own field engineers are experienced in all phases of aggregates production. They will be glad to study your project, analyze your needs, then help you design an efficient installation that will fit your need.

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☐ BITUMINOUS PLANTS	☐ IMPACT BREAKERS	☐ VIBRATING SCREENS
☐ BITUMINOUS PAVERS	☐ APRON FEEDERS	☐ CONVEYORS

*Name*_____

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*Address*_____

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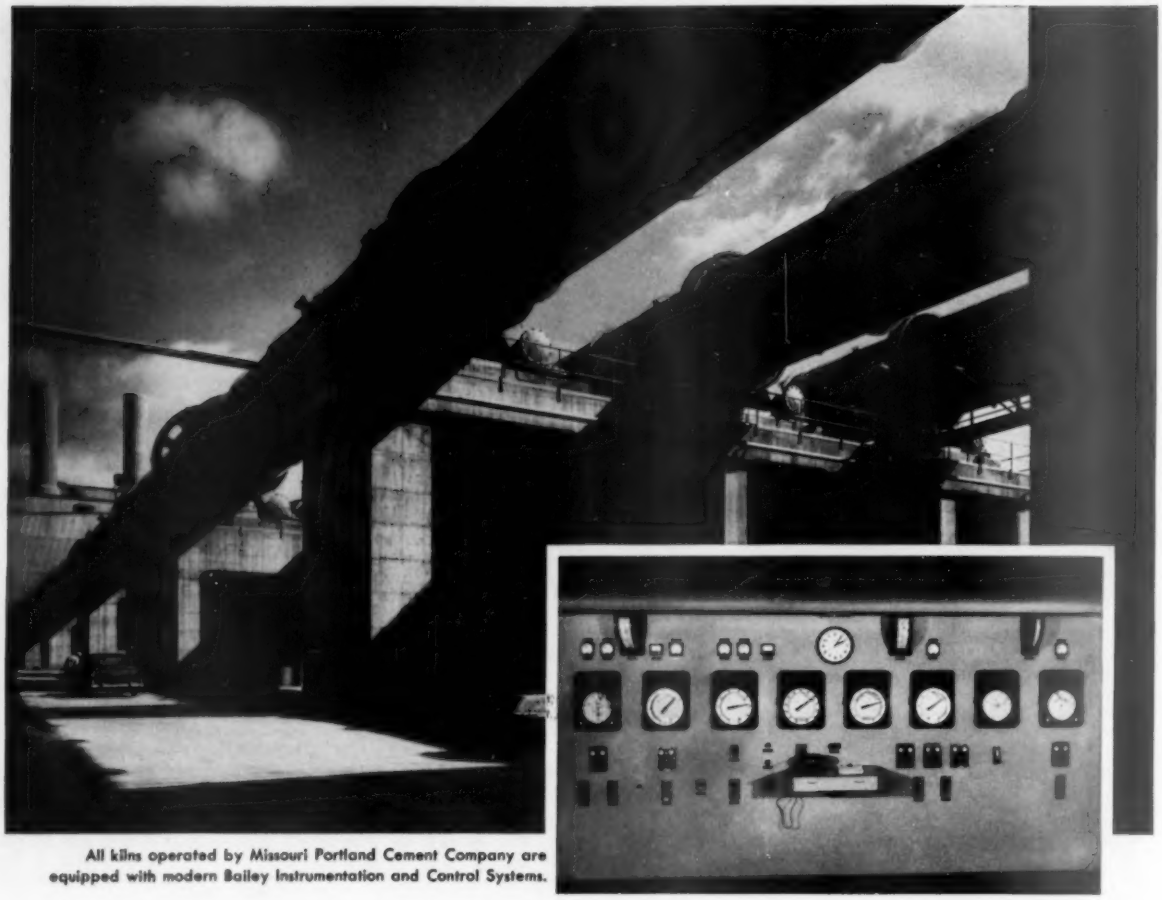

All kilns operated by Missouri Portland Cement Company are equipped with modern Bailey Instrumentation and Control Systems.

How to control the digestion of giant kilns

These giant kilns have delicate stomachs. But the Missouri Portland Cement Company knows how to coddle them to get maximum capacity, uniform product and low fuel rate.

They do it with a Bailey Control System with a central Control Panel where a single attendant has complete control of the variables of combustion and heating.

Because the system keeps continuous chart records, the Burner can check the reading and trend of Kiln Speed, Exit Gas Temperature, % Oxygen in Exit Gas, % Combustibles in Exit Gas, Kiln Shell Temperature, Hood Draft, Temperature of Secondary Air Leaving Cooler, Temperature of Coal-Air Mixture from Coal Mill, Fuel Gas Flow, Feed End Draft, Kiln Speed, Cooler Speed, Cooler Fan Discharge Pressure, Cooler Undergrate Pressure, Cooler Air Flow, Coal Mill Primary Air Pressure, Coal Mill Exhauster Fan Suction, and Fuel Gas Flow.

The system works so dependably that week-long kiln runs have been made without the operator touching anything.

Let a Bailey Engineer help you plan for peak performance! For additional information write for a Bailey Kiln Control Folder. C-14

BAILEY METER COMPANY

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In Canada—Bailey Meter Company Limited, Montreal

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NEW MACHINERY

(Continued from page 140)

Stepless controls

NEW CONTROLS for vibrating feeders provide continuous, stepless variable feeding rates from nothing to full capacity, and anywhere in between, it has been announced.

They provide instantaneous feed rate variation, and give accurate regulation of feed for bulk materials. These new controllers are now standard equipment for the maker's complete line of electromagnetically vibrated feeders which range in maximum capacities from 500 lb. to thousands of tons an hour. They are also available for feeders already in operation in the field. *Syntron Co., 322 Lexington Ave., Homer City, Pa.*

Enter 318 on Reader Card

Eliminate rust problems

THERE'S NO NEED to go to time-consuming, costly scraping, wire brushing or sand-blasting of steelwork. This new coating goes on right over rust, by brush, spray or dip, and one application is usually sufficient. It penetrates through rust particles and has a natural affinity to the metal surface beneath the rust, claims the manufacturer. Known as Rust-Cure, it is ready to apply by brush and ordinarily requires thinning for spray application. It's available clear or in colors—red, aluminum, green, light gray and black. *The Monroe Company, Inc., 10703 Quebec Ave., Cleveland 6, Ohio.*

Enter 319 on Reader Card

New diesel truck

A GIANT all-new diesel tractor will be unveiled to the trucking world. The tandem tractor, first of the truck models to be exhibited publicly, will be powered by a Cummins NH-220 diesel engine.

The new diesel trucks with the NH-220 engine will offer a maximum gross combination weight rating of 76,800 lb., more than 15 percent greater than on present models. This gcw. will enable the new trucks to carry virtually any product and commodity in over-the-highway operations.

Diesel engines will be available this fall on three basic truck models with a gross vehicle weight range from 27,000 to 53,000 lb. and a gross combination weight range from 50,000 to 76,800 lb. *Dodge Trucks, 2751 Jefferson, Detroit 7.* **Enter 320 on Reader Card**

(Continued on page 144)

you get rock bottom operating costs with

BROOK A.C. MOTORS

Brook Motors cost less to install and they require a minimum of maintenance—there is no finer motor built. They are cutting costs in pits and quarries coast-to coast, powering conveyors, crushers, screens and washers. Brook Motor shown drives a hammermill at Camp Rock Products Co., New Port Richey, Fla.—one of the many Brook Motors at this plant. Send for literature.

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This Dustex Miniature Cyclone Collector has been on the job at Rock Road Construction Co. in Chicago for five years, and a second Dustex, for four years.

"We have yet to spend any money for maintenance and repair," the firm reports. "You claimed high-efficiency collection and low maintenance costs. Your claims have been fully substantiated."

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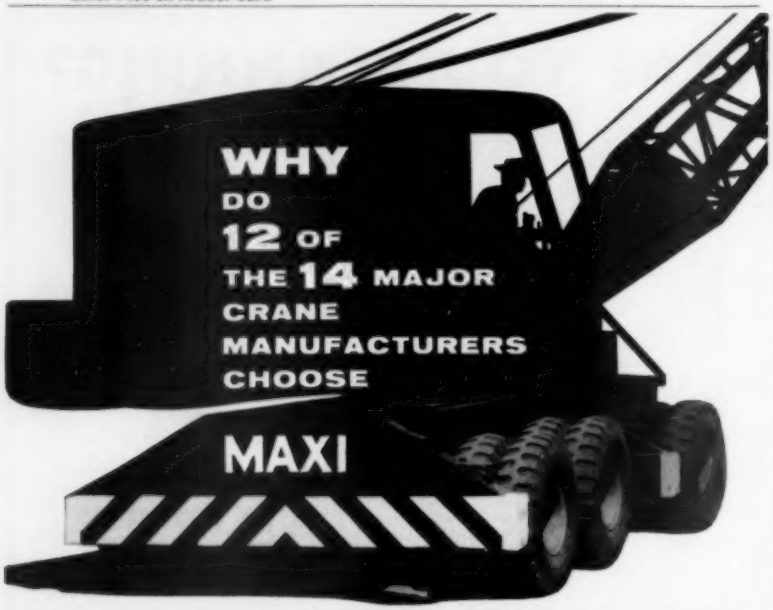

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Because, for rugged design and superior performance, the MAXI *has no equal.* **For facts showing you how a one-man operated MAXI mounted self-propelled crane can cut your operating and labor expenses, contact your local crane dealer or write to:**

THE MAXI CORPORATION

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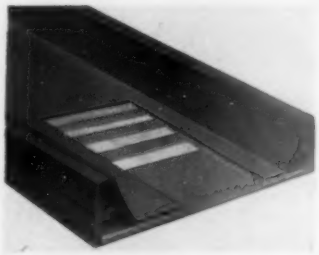
NEW MACHINERY

(Continued from page 143)



Conveyor belt

A PATENTED FLANGE edge conveyor belting which eliminates the use of troughing idlers is now available. Known as the Monobelt, the unique design reduces the initial conveyor cost and maintenance expense and substantially increases belt life. This new one-piece belting is pre-tensioned to flex as it passes around the pulleys, eliminating fatigue due to flexing and allowing belt speeds much higher than those possible with troughed flat belts, according to the maker.

Monobelt delivers from 40 to 200 percent more material than a conventional troughed belt of the same width traveling at the same speed. With an increased cross-section area, higher angles of incline are possible. Available in widths up to 48 in. the new belt comes in every grade, type and class of belting previously used in industry, including oil, heat and flame resistant types, and in various grades for handling moderate to extremely abrasive materials. Flange sizes range from 1 to 3 in. *The MonoBelting Corp., 1980 Mountain Blvd., Oakland 11, Calif.* **Enter 309 on Reader Card**

Lightweight dragline bucket

MORE PAY LOAD with less weight is the double advantage claimed for a new lightweight dragline bucket recently placed in manufacture. Designed for easy and medium digging, the lightweight bucket is engineered for deep bites, simple control and clean dumping. The all-welded lightweight Type A bucket is available perforated or non-perforated. Sizes range from ⅜ to 3½ cu. yd., with larger buckets up to one ton lighter than average conventional dragline buckets. Lesser weight permits use of a larger size bucket with the same rig, thus providing greater pay load. *M. P. McCaffrey, Inc., 2121 E. 25th St., Los Angeles 58, Calif.*

Enter 310 on Reader Card END

Enter 1432 on Reader Card

Famous Model "AF" Bagpaker® weighs, fills, settles and closes a 100-lb. bag every 2½ seconds!

With this engineering marvel at his command, the *one man* in our picture can package from 15 to 25 BPM. And he can *instantly* adjust the rate of speed through the machine's variable drive.

The operator simply hangs empty multiwalls on the hopper spouts as the 10-station turret rotates past him. The Model AF Bagpaker takes over from there.

It accurately *weighs* any free-flowing or semi-free-flowing material, quickly *fills* the bag, *settles* it by vibration, automatically *preforms* the top, and *stitches* it tight. You can choose from nine different closures. Bagpak's exclusive "Cushion Stitch," a reinforced two-thread double-lock chain stitch, is standard equipment.

The Model AF Bagpaker is ruggedly constructed of heavy welded steel throughout. Gears are fully enclosed and bathed in oil. Critical parts are of *stainless steel*.

There is a Bagpaker model for every need. They range from the completely automatic Model "A" Bagpaker, capable of packaging up to *60 tons per hour*, to small, manually operated economy models.

Whatever your multiwall packaging needs, it will pay you to talk to your Bagpak sales and service representative.

Bagpak Division **INTERNATIONAL PAPER** New York 17, N. Y.

MANUFACTURERS NEWS

New managerial promotions at Link-Belt Speeder Corp.

LINK-BELT SPEEDER CORP., Chicago, Ill., has announced the election of C. M. Basile, N.V. Chehak and M. P. Luber to new positions in the company's management group.

Mr. Basile (left), formerly vice president of manufacturing and sales has been elected executive vice president. Mr. Chehak (center), sales manager since 1958, has been elected vice president and sales manager and Mr. Luber, general plant superintendent since 1956, has been promoted to vice president of manufacturing.

Bulk cement trailers with 5 bbl. per minute capacity

THE FRUEHAUF TRAILER CO., Detroit, Mich., had an impressive array of Fruehauf Screw Type Bulk Cement Trailers that were delivered to the C. T. Hertzack Co., contract hauler for the Louisville Cement Co. at Speed, Ind.; and The Cement Transport Co., contract hauler for the Kosmos Portland Cement Co., of Louisville, Ky. These particular cement haul trailers utilize mechanically driven screws which unload at 5 bbl. per minute. Loading hatches are set at special dimension exactly suited to loading equipment at the Louisville and Kosmos Cement Companies.

Basic appointments

BASIC INCORPORATED, Cleveland, Ohio, recently added three new men to its sales and service staff while transferring three present members to new territories.

D. Bedell Baxter has been appointed to the newly created post of assistant to the vice president-service engineering, with headquarters in Cleveland. David E. Holmgren has been appointed sales development engineer, Cleveland. Thomas P. Stanton will be in charge of the Eastern sales office, a new district formed for the Atlantic coast region. George J. Peer has become Midwestern district sales manager with headquarters in Hammond. Ralph E. Forsman, sales engineer, has moved from St. Louis to Hammond and Charles J. Tyson has taken over the St. Louis sales office.

New truck sales division

LETOURNEAU-WESTINGHOUSE CO., Peoria, Ill., has announced the appointment of L. B. Philippi as head of their new truck sales division. As sales manager—Truck Division, Mr. Philippi will direct world-wide merchandising activities of the new Haulpak line of end-dump and bottom-dump trucks. He will coordinate his sales activities through the company's existing domestic, export and government divisions.

The Haulpak, off-road hauler, are unusual because of their rugged simplified design. The line includes three models, consisting of a 27 and 32 ton end-dump; and a 80 ton bottom dump coal hauler.

Stenberg general manager

TOR R. BENGTSON has been appointed general manager of Stenberg Mfg. Corp., Hoosick Falls, N.Y. Stenberg Mfg. Corp. are manufacturers and distributors of Flygt submersible electric construction, mining and industrial pumps. *(Continued on page 148)*

Enter 1466 on Reader Card

Bucyrus-Erie

BALANCED ENGINEERING

keeps trucks on the move

How can you be *sure* of high production? Consider this: *more quarry and mine operators depend on Bucyrus-Erie electric shovels than any other.* Performance on the job proves that they are more rugged, stay on the job longer, require less service and maintenance.

Behind this kind of performance is Bucyrus-Erie *Balanced Engineering* . . . engineering that makes sure that all components are soundly designed, soundly built. The voltage control system is an example. It delivers fast acceleration and deceleration the instant you need it . . . gives you high torque at low speeds, high speeds at low torque . . . and is designed to be *consistently dependable.*

For the complete story on *Balanced Engineering,* write Bucyrus-Erie Company, South Milwaukee, Wisconsin, Dept. 2LH.

Bucyrus-Erie means . . .

Balanced Engineering

BUCYRUS ERIE®

MANUFACTURERS NEWS

(Continued from page 146)

WEMCO names manager

WESTERN MACHINERY CO., San Francisco, Calif., has named W. E. Galland to the newly created position of market development manager for WEMCO, a division.

Mr. Galland will be in charge of all phases of marketing program including product development, product applications, and the evaluation and development of new marketing areas.

Link-Belt sales and net income report

LINK-BELT CO., Chicago, Ill., sales and net income for the first quarter ended March 31 were about equal to year-ago results. Orders in the first quarter have increased 20 percent from the third and fourth quarters of 1958. A year ago the company reported March quarter sales of $35,884,250 and net income of $1,334,898 or 71 cents a share. The company noted that the current order situation is in direct contrast with 1958 when orders were 5 percent under production, depleting the concern's backlog.

MacLean president of Dodge

J. ALLAN MACLEAN has been elected president of Dodge Manufacturing Corp., Mishawaka, Ind., succeeding Joseph E. Otis, Jr., who has been elected chairman of the corporation's board of directors.

Mr. MacLean, group executive and general manager of Bendix Products Division of Bendix Aviation Corp., joined the organization in 1940 as a senior engineer and advanced to his present position through assignments of importance in engineering, quality control, aircraft products and industrial relations. He has been a member of the board since 1956.

Mr. Otis became president Nov. 1, 1939, when he came to Dodge from the presidency of Stewart-Warner Corp., Chicago.

Distributors appointed in upper midwest

TWO NEW DISTRIBUTORS have been appointed in the upper midwest to sell and service the "Michigan" line of construction and bulk material handling equipment for the Construction Machinery Division, Clark Equipment Co., Benton Harbor, Mich.

Road Machinery & Supplies of Fargo, Inc., Bismarck, N.D., will handle the "Michigan" line in the entire state of North Dakota. Officers of the company are M. J. Sill, president; M. R. Sill, vice president; and M. M. Sill, secretary and treasurer.

Road Machinery & Supplies of Minneapolis, Inc., Duluth, Minn., will handle the "Michigan" line in northern Minnesota. Officers of the company are W. Hetzel, parts manager; A. M. Anderson, sales manager; and W. Hetzel, service manager.

(Continued on page 150)

Our Plant No. 2 alone, has turned out in excess of 300 tons per hour
— says Dave Rogers, Daley Corporation, San Diego, California

More than 300 T.P.H. from one MADSEN Asphalt Plant—that's the kind of production that makes money! And, when you line up two big MADSEN Plants together, as the Daley Corporation has, you're in the bituminous mixing business in a big way.

Here's what Dave Rogers says about their MADSEN Plants—"Our two big MADSEN Plants running simultaneously can produce all the tonnage we need. Generally, we keep our 8000-lb. plant rolling steadily turning out batches for our own contracts—highways, airports, etc. That leaves our 6000-lb. plant free to handle our 'grocery store' business. This 6000-lb. plant is equipped with MADSEN's 'Auto-Cycling' system with fast and automatic operation of mixing, asphalt injection, dumping to truck and closing of mixer gate automatically. Mix specifications can be changed a dozen or more times a day if necessary with no loss of time.

"MADSEN's careful design, oversize construction throughout, with no 'weak spots' anywhere in the plant—together with the big-tonnage output, easy accessibility and low maintenance costs, plus excellent factory service . . . these are the advantages that sold us on MADSEN," says Mr. Rogers.

Whether you plan to buy 'em by the pair or are interested in a small, portable asphalt plant that can make you real money . . . you'll be ahead with a MADSEN Asphalt Plant. See your MADSEN Distributor today.

Features and specifications of the MADSEN Asphalt Plants shown:

PLANT MODELS AND CAPACITIES Model 481 6000-lb. Batch Capacity Model 481 8000-lb. Batch Capacity

GENEROUS AND OVERSIZE ANTI-FRICTION BEARINGS THROUGHOUT

VIBRATING SCREEN—Symons Double Deck with Split Deck added.

DRYER—Madsen Counter-Flow Dryers with Full-Floating Cast Steel tires and trunnions.

BURNER—Combination Gas-Oil, Low Pressure.

DUST COLLECTOR—Madsen 12' diam. Cyclone with #100 Madsen Exhauster.

MINERAL FILLER EQUIPMENT—Commercial Dust Unloading Hopper, Unloading Screw, Elevator and Dust Storage Silo.

WET SETTLING EQUIPMENT—Madsen Model 7812 Triple Wet Tube Dust Washer . . . meets air pollution requirements everywhere.

CONVEYCO FULLY AUTOMATIC BATCHING SYSTEM—(Optional with Madsen Asphalt Plants).

MADSEN maintains a complete parts stock in Los Angeles and Lima, Ohio

Ask your MADSEN Distributor for Catalog No. 800-A or write MADSEN WORKS

MADSEN WORKS / BALDWIN-LIMA-HAMILTON Construction Equipment Division

14120 E. ROSECRANS AVE., P.O. BOX 38, LA MIRADA, CALIFORNIA
BALDWIN-LIMA-HAMILTON CORPORATION, LIMA, OHIO

Enter 1459 on Reader Card

Enter 1464 on Reader Card

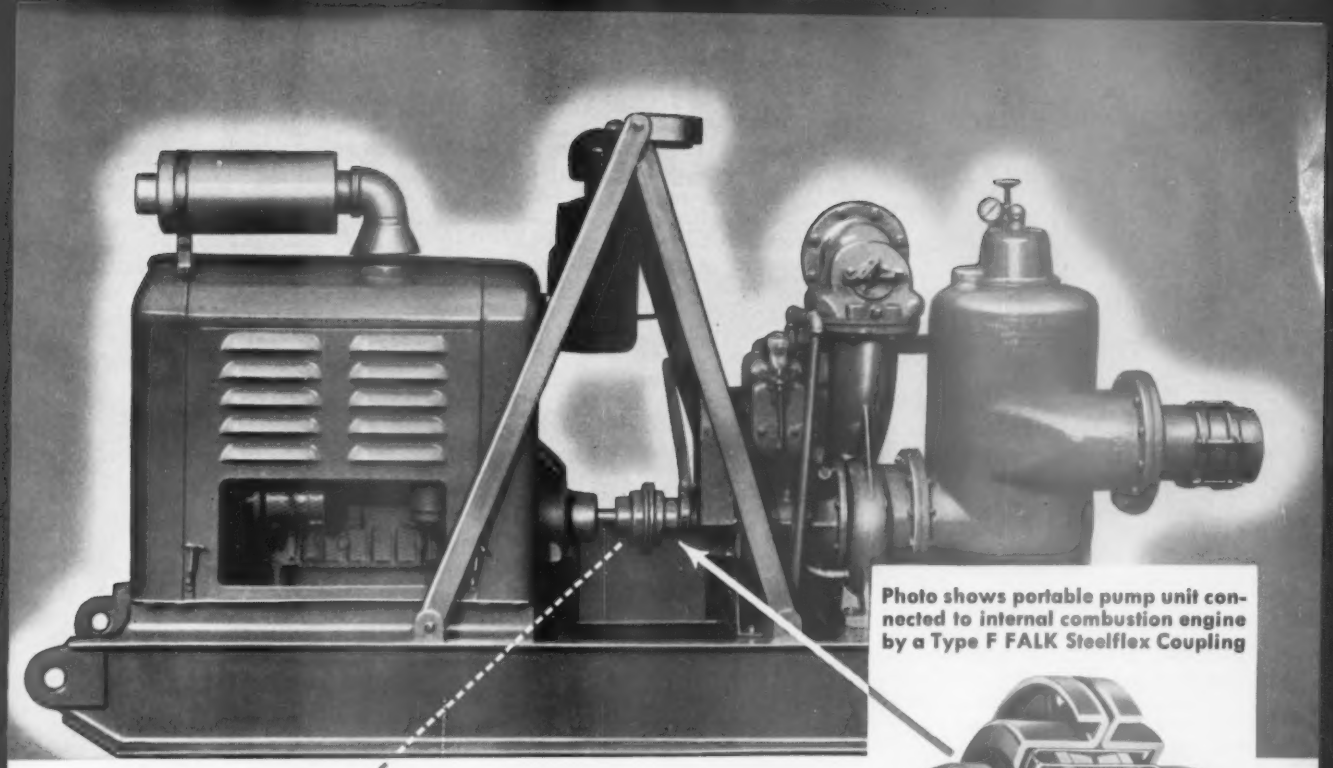
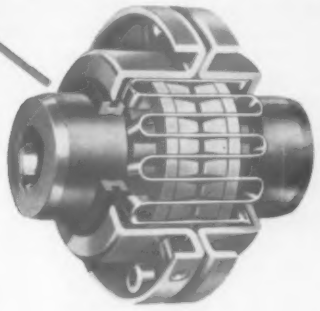


Photo shows portable pump unit connected to internal combustion engine by a Type F FALK Steelflex Coupling



How FALK STEELFLEX Couplings give your connected machinery Double Protection

FIRST: *They protect against shaft misalignment.* Some degree of shaft misalignment is unavoidable—and unless protective compensation is provided, additional loads are developed on shafts, bearings and other revolving elements. The result is excessive wear-and-tear—and often actual breakage....FALK Steelflex Couplings compensate for either angular or parallel misalignment—*or for the more serious condition involving both!* The exclusive Steelflex gridmember which joins the two hubs is not fastened to either hub; thus, either hub can shift in any direction without imposing a load on the other hub.

Yet, important as protection against shaft misalignment is to you, it is only one function of the *truly flexible* FALK Steelflex Coupling.

SECOND: *They protect against torque fluctuations* which create excess wear on connected machines and frequently induce destructive shaft misalignment. The exclusive FALK Steelflex grid-groove design cushions shock loads, dampens vibration, reduces impact loads as much as 30 per cent. You get this extra margin of protection that *can mean the difference between operating and breakdown!* You save on maintenance costs. And —you prolong the service life of your machines!...For complete information, ask your FALK Representative or Authorized Distributor. Or—**write direct for Bulletin 4100.**

FALK and STEELFLEX are Registered Trademarks

THE FALK CORPORATION, MILWAUKEE 1, WISCONSIN

Representatives and Distributors in Most Principal Cities

Manufacturers of Quality Gear Drives and Flexible Shaft Couplings

Basic Type F FALK STEELFLEX COUPLING fills the needs of 90% of industrial applications

This cutaway view shows the exclusive Steelflex design which provides *torsional resilience with the strength of steel.* This torsional resilience spreads peak or shock loads over a relatively long increment of time, thus *greatly reducing stresses* in connected machinery.

The versatile Type F Steelflex can be used horizontally or vertically, without modification or special parts. It is ideally suited to 9 out of 10 applications. For unusual applications involving overload conditions, extended shafts, brakes, etc., standard designs of dual-purpose Steelflex couplings are available.

For most applications, you can give your machines the extra protection afforded by FALK Steelflex Couplings at no extra cost!

FALK

...a good name in industry

MANUFACTURERS NEWS

(Continued from page 148)

Longmore elected vice president

SPRAGUE & HENWOOD, INC., Scranton, Pa., has announced the election of Mr. H. J. Longmore as vice president in charge of sales. Mr. Longmore has been associated with Sprague & Henwood for over 34 years. He is also executive vice president of Sprague & Henwood International Corp.; vice president of Mine & Mill Supply Co., and secretary of Rotary Drilling Equipment Inc. These firms are subsidiaries of Sprague & Henwood, Inc.

Four merit promotions

FOUR MERIT PROMOTIONS involving division and corporate executives of The White Motor Co., Cleveland, Ohio, have been announced.

John C. Tooker, who has been general manager of the Reo Division at Lansing, Mich., since June, 1957, was named vice president of the White Motor Co. and general manager of the Reo Division.

Noah O. Gresham, director of wholesale operations for White since April, 1958, was appointed vice president of wholesale operation of the truck division.

Frank J. Force and Lee J. Perme, attorneys in the legal department were named assistant secretaries of the parent corporation.

New Pittsburgh representative

AMERICAN AIR FILTER CO., Inc., Louisville, Ky., has announced the appointment of R. M. Toucey as its exclusive representative in the Pittsburgh area for its Herman Nelson unit ventilator products for schools, Herman Nelson heating and ventilating products, and its Illinois Engineering Division heating systems and controls.

Kaiser Aluminum named one of ten top new plants

KAISER ALUMINUM & CHEMICAL CORP., Ravenswood, W. Va., has been named one of the ten top plants built in 1958. The plant was picked from over 700 nationwide entries by *Factory*, a McGraw-Hill publication in its 25th annual "Top Plants" competition.

Selection was based on adaptibility to changes in production methods and processes; provisions for growth and expansion; plant electrical services; services other than electrical; employe facilities and services; maintenance, and appearance of buildings.

Mistaken identity

WE REGRET that we erroneously ran the picture of Mr. Charles Golson, Sales Development Manager of the Aggregate Beneficiation Program at Western Machinery Co., San Francisco, on p. 180 of the June '59 ROCK PRODUCTS. We mistakenly placed his photograph with an article on R. W. Eager. Mr. Eager was named manufacturing vice president of Joy Manufacturing Co., Pittsburgh. END

WHERE TO BUY

Rock Products Classified Advertising

Forms close 12th of Month Preceding Publication

RELIABLE HEAVY EXCAVATION EQUIPMENT

Draglines—Shovels—Cranes—Drills—Trucks

15-W Bucyrus Erie Elec. Drag, 215', 13 yd.
9-W Bucyrus Erie Elec. Drag, 160', 11½ yd.
9-W Bucyrus Erie Diesel Drag, 200', 9 yd.
7400 Marion Diesel Drag, 175', 13 yd.
7400 Marion Elec. Drag, 175', 12 yd.
625 Page Diesel Drag, 150', 10 yd.
621-S Page Diesel Drag, 125', 7 yd.
200-W Bucyrus Erie Diesel Drag, 125', 6 yd.
5-W Bucyrus Erie Diesel Drag, 100', 6 yd.
2400 Lima Dragline, 130', 5 yd.
4500 Manitowoc Drag, 120', 5 yd.
120-B Bucyrus Erie Elec. Drag, 115', 5 yd.
111-M Marion Drag, 100', 4 yd.
1601 Lima, 4 yd., Shovel/Drag
3900, 3500 & 3000 Manitowoc Cranes
5560 Marion 26 yd. Elec. Shovel
750-B Bucyrus Erie 20 yd. Elec. Shovel
5480 Marion 18 yd. Elec. H. L. Shovel
151-M Marion 7 yd. Elec. Shovel
170-B Bucyrus Erie 6½ yd. Elec. Shovel
4161 Marion 6 yd. Elec. Shovel
2400 Lima 4½ yd. H. L. Shovel
120-B Bucyrus Erie 4 yd. Elec. Shovel
4500 Manitowoc 5 yd. H. L. Shovel
111-M Marion Standard & H. L. Shovels
3500 Manitowoc Standard & H. L. Shovels
54-B Bucyrus Erie Standard & H. L. Shovels
Large selection of smaller Shovels & Draglines available
Model T-750 Reich Truck Mounted Rotary and Down-the-Hole Drill
McCarthy & Compton Coal Auger Drills
Euclid trucks, truck cranes, dozers, scrapers, front end loaders, attachments and other misc. equipment available

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

DEPENDABLE USED MACHINES
Shovel front for Lorain 77B 1½ yd. w/PM shovel bucket

Scout Backhoe
Model 360 Hopto
A-W ½ yd. shovel
Hopto Scrap Grapple
Jeep Trencher Mod. CJ
Unit 614 ½ yd. dragline.
Lorain 20 ton truck crane
Michigan truck crane T-6K
514 Unit backhoe ½ yd.
30"x20' Pioneer conveyor
HD-10 Allis Chalmers dozer
Bay City 25 ½ yd. dragline
Austin 8 ton roller KT-142
20"x38' portable conveyor
30"x73' Barber-Greene conveyor

This equipment rebuilt in our modern plant by expert mechanics. Come see it!
10002 Southwest Highway TRACTOR & EQUIPMENT CO. Oak Lawn, Illinois

PORTABLE PLANTS

Cedarapids 25x40 Jaw w/feeder & Cat power
Cedarapids 22x36 Jaw w/feeder & Cat power
Pioneer 20x36 Jaw w/feeder & Cat power
Pioneer Secondary 4022 roll & 4x10 screen
Symons 3' Portable Cone
Cedarapids Commander Tandem
Cedarapids Jr Tandem
Universal 880 JR
Cedarapids Pitmaster
Pioneer 300 WAE Washing Plant

CRANES EUCLIDS CRUSHERS

AGGREGATE EQUIPMENT & SUPPLY CO. 811 Lehmann Bldg. Peoria, Ill. 3-9553

BARGAINS HERE: 750 CFM West. Staty. Comp. 3x9' Feeder, Univ. 2036, Pioneer 1036 Plants. 5x17, 5x21, 6x22 Tube Mills, 14' Air Separators, 50' enclosed Elevator, Roller, screw and 18" x 30' Port. Conveyors, Unloaders, Ready Mix Tanks.
DRYERS: 4x20, 4x25, 5½x40, 6x50, 8x70, 8x124. 300HP 2 drum 500 HP spl. drum **HOISTS.**
SAUERMAN SCRAPERS: ½ to 3 yd.
CRUSHERS: 816, 1020, 1024, 1036, 1040, 1536, 2036, 2436, 3042, 4042 **JAW:** 9K & 12K Gates. 10, 16, 18, 20" McCully, AC322, 636, 848R, 28", 36", 48", 16B, 25B Telsmith, 7¼KV8 GYR. 2 & 3' **CONES.** 3018, 5424 **DBL. ROLL.**
CRANES: WB2 Browning Wagon, 20, 30 & 60 ton Bridge 60 ton Brownhoist Locomotive.
36" x 20' dbl **LOG WASHERS.** Telsmith 2 Screw.
MILLS: Raymond 5047, Dixie 2424 non-clog, 3650 std. 3636 Jeffrey, Stedman 2018 Hammer.
SHOVELS: NW6, 25, 80D. Lima 34, 44, 1201, Lorain 50, 820, Koehring 702, 1005. P&H 955, 1055, 620W. Marion 111M, 492. Bucyrus 54B, 71B, 120B, 200W, 9W. Manitowoc 4500.
CRANE RUNWAY: lattice type 270' long.
MID-CONTINENT EQUIPMENT CO. INC.
8321 Gannon St. Louis 32, Mo. Wydown 1-2826

JAW CRUSHERS
60"x48" to 6"x3"
New and used RELIABLE
"Farrel-Bacon" Jaw Crushers
BACON-PIETSCH CO., INC.
26 Park St., Montclair, N.J.
29 Washington Ave., Hamden, Conn.
Phone Montclair—Pi 6-1300

BONDED QUALITY BARGAINS

CURRENT MODELS - IMMEDIATE SHIPMENT FROM OUR FACTORY - WRITE, WIRE OR PHONE FOR FREE CATALOG AND PRICES

BONDED® GENERAL DUTY AND HEAVY DUTY VIBRATING SCREENS

More than 7000 Mines and Quarries have modernized with Bonded Equipment

PERFECT BALANCE AND SHARP ACTION. Eccentric weight mechanism, spring mounted. 1 to 3 decks, 2′ x 4′ to 3′ x 8′. **WRITE FOR "SEVEN SECRETS OF SUCCESSFUL SCREENING" IN BULLETIN NO. 1086.**

Model Number	Screening Area	No. of Decks	Sale Price
124A	2′x4′	1	$ 443
224A	2′x4′	2	472
126A	2′x6′	1	472
226A	2′x6′	2	501
134A	3′x4′	1	504
234A	3′x4′	2	570
136A	3′x6′	1	581
236A	3′x6′	2	688
336A	3′x6′	3	956
138A	3′x8′	1	675
2[illegible]8A	3′x8′	2	815
338A	3′x8′	3	996

FACTORY BALANCED, CONTROLLED VIBRATION. Four bearing positive throw eccentric shaft; 3′ x 6′ to 5′ x 14′. 1 to 5 decks. **WRITE FOR BULLETIN NO. 1087 AND 9 REASONS WHY BONDED IS YOUR BEST BUY.**

Model Number	Screening Area	No. of Decks	Sale Price
336B	3′x6′	3	$1620
436B	3′x6′	4	1685
138B	3′x8′	1	1510
238B	3′x8′	2	1620
338B	3′x8′	3	1735
248B	4′x8′	2	2310
348B	4′x8′	3	2440
2410B	4′x10′	2	2460
3410B	4′x10′	3	2550
2412B	4′x12′	2	2590
3412B	4′x12′	3	2970
4412B	4′x12′	4	3165

BONDED® TROUGHING IDLER CONVEYOR BARGAINS

CONVEYOR PRICES INCLUDE BELTING

Complete Pre-Fab sections of 8" Jones & Laughlin Jr. I Beam Frame Conveyors quickly and easily joined together on the job. These beams are rolled with .20% Copper Content. Atmospheric exposure tests disclose that Junior Beams, with .20% Copper have as much as four times the resistance to corrosion as non-copper steels. Braced with structural angle, welded to frame for maximum rigidity. Equipped with 5" roll diameter idlers and return rolls, 20" diameter head pulley and 16" diameter tail pulley, mounted on 2 3/16" or 2 7/16" diameter shaft.

We take our loss on our stock of short length belting. You can save as much as 50% on BONDED CONVEYOR SPECIALS, with conveyor belting in two pieces. Belt is new 4-ply, 28 oz. duck, 1/8" top rubber cover x 1/16" bottom cover Major grade belt and is Fresh Stock made by leading manufacturers. WRITE FOR BULLETIN #1138.

Bonded troughing idler conveyors also available in Truss Frame Construction. WRITE FOR BULLETIN #1139 AND PRICES.

Belt Width	Length of Conveyor	List Price	Sale Price	Add or Deduct Per Ft.
14"	25′	$1397	$ 738	
14"	50′	2222	1159	$16.84
14"	85′	3377	1748	
16"	20′	1262	667	
16"	45′	2137	1118	
16"	60′	2662	1388	18.84
16"	90′	3712	1930	
18"	25′	1477	797	
18"	45′	2217	1182	
18"	70′	3142	1663	
18"	85′	3697	1952	19.24
18"	100′	4252	2240	
18"	130′	5362	2817	
20"	25′	1517	835	
20"	60′	2882	1548	
20"	75′	3467	1854	20.37
20"	90′	4052	2159	
24"	25′	1590	898	
24"	45′	2430	1334	
24"	70′	3488	1878	
24"	100′	4740	2532	21.78
24"	120′	5580	2967	
24"	150′	6840	3621	
30"	50′	2911	1617	
30"	70′	3871	2112	24.75
30"	90′	4831	2607	
36"	25′	1818	1118	
36"	45′	2858	1677	
36"	60′	3638	2096	27.95
36"	100′	5718	3214	

BONDED® QUALITY BUILT BUCKET ELEVATORS

ENCLOSED ELEVATOR

Open or Enclosed, Vertical or Inclined Bucket Elevators with Continuous or Spaced Buckets mounted on Chain or Belting. Bonded's 19 standard models are designed for low cost, high capacity elevating of practically all bulk materials. Open and other types priced on request. There is a style of bucket for virtually every material or condition: wet or dry, lumpy or fine, granular, alliery, or pellet shapes, hot or chemically active.

Prices listed at right are for Vertical Enclosed Elevators. Standard Elevators with Chain mounted buckets use #477 or #C102B combination chain. 4, 5 and 6 ply, 32 oz. or 35 oz. duck belt is used on Belt mounted Bucket Elevators.

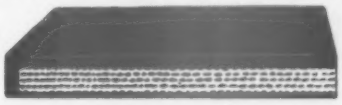
Bonded Bucket Elevators are Jig Built to insure easy Job-Site Installation.

Model No.	Bucket Size Inches	First 20′ (Discharge Ht.)	Add or Deduct Per Ft.
Style "A" Spaced Malleable Buckets on Chain			
C53A	5x3½	$1071.50	$20.25
C64A	6x4	1088.50	21.00
C85A	8x5	1235.00	25.50
C106A	10x6	1281.00	27.50
C127A	12x7	1510.00	31.25
C148A	14x8	1673.50	36.00
Style "A" Spaced Malleable Buckets On Belt			
B53A	5x3½	$1099.00	$20.50
B64A	6x4	1116.50	21.25
B85A	8x5	1311.50	27.25
B106A	10x6	1692.50	33.00
B127A	12x7	1854.50	37.25
Style "E" Continuous Steel Buckets On Chain			
C85E	8x5x 7⅝	$1397.00	$31.25
C126E	12x6x11⅝	1599.00	34.25
C108E	10x8x11⅝	1604.00	34.75
C128E	12x8x11⅝	1624.00	35.50
C148E	14x8x11⅝	1710.00	36.75
Style "E" Continuous Steel Buckets On Belt			
B85E	8x5x 7⅝	$1727.50	$34.50
B116E	11x6x 8⅝	1839.50	38.75
B128E	12x8x11⅝	2013.00	43.50

A complete line of parts and accessories available to build your own Bucket Elevators. Continuous Steel, Salem Steel and Malleable Iron Buckets available in a wide variety of sizes, shapes, gauges and styles at low prices. **WRITE FOR BULLETIN #1203 AND PRICES DESCRIBING COMPLETE LINE OF BUCKET ELEVATORS AND BUCKETS.**

NEW CONVEYOR BELTING SAVE UP TO 34%

WE PAY FREIGHT ON 200 POUNDS OR OVER



QUALITY TESTED CONVEYOR BELTING*

Major Brand: 12# to 15# Average Friction Pull. 800# to 1000# Average Cover Tensile.

Heavy Duty 4-ply, 28-oz. duck, 1/8" top rubber cover x 1/16" bottom rubber cover belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stocks.

Width	Ply	List Price	Sale Price
14"	4	$3.63 ft.	$2.83 ft.
16"	4	4.08 ft.	2.97 ft.
18"	4	4.51 ft.	3.29 ft.
20"	4	4.97 ft.	3.80 ft.
24"	4	5.85 ft.	4.26 ft.
30"	4	7.18 ft.	5.21 ft.
36"	4	8.51 ft.	6.18 ft.

Major Bee Brand: 16# to 19# Average Friction Pull, 2400# to 3000# Average Cover Tensile. Skim coat between plies.

A high grade of heavy duty 4 and 5-ply, 28 oz. duck, 1/8" top rubber cover x 1/16" bottom rubber cover. These belts are for more severe service, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal, and other similar materials, both wet and dry. Belts have molded rubber edges.

Width	Ply	List Price	Sale Price
14"	4	$ 4.31 ft.	$3.06 ft.
16"	4	4.85 ft.	3.46 ft.
18"	4	5.39 ft.	3.83 ft.
20"	4	5.90 ft.	4.37 ft.
24"	4	6.94 ft.	4.94 ft.
30"	4	8.53 ft.	6.07 ft.
36"	4	10.09 ft.	7.35 ft.
24"	5	8.14 ft.	5.78 ft.

***All belting is tested by the Engineering laboratory of one of the largest universities in the United States. It is guaranteed to meet or exceed listed specifications.**

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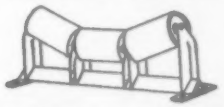

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14" belt	$19.75	24" belt	$22.75
16" belt	20.50	30" belt	23.85
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20" belt	22.10	48" belt	27.50
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14" belt	$ 8.50	24" belt	$11.00
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Unit 614, ½-yd. Diesel Backhoe.
American 100, ½-yd. Gas Clam-Backhoe.
Lorain TL-20, ½-yd. Diesel Backhoe.
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Michigan TLDT-20, 20-ton Truck Crane
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Lorain MC-110, 10-ton Gas Moto-Crane.
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JAW: Acme 10x20, 15x36, 14x36, 14x38, 10x43, 16x32, 18x32, 25x40. Eagle 10x16, 20x36. Diamond 24x36". Cedar Rapids 10x30, 15x36, 20x36, 35x40. Farrell 10x20, 18x30, 14x36, 16x36, 36x48. Buchanan Type C 30x42, 36x42. Traylor 18x36, 24x36. Allis-Chalmers 30x18. Good Roads 18x30. Telsmith 18x32. Universal 15x24.
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25B Kennedy Van Saun 12, 37½, 38, 40½"
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HAMMERMILL: Jeffrey Type B3 24x20, Type B 36x24, 36x36, 36x42, Eagle 24x24, Stedman 24x30, 36", 42". Cedar-Rapids 50-50, 30x23, 20x42.
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Diamond Wea-Con port. Primary 20"x36" crusher
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Johnson TY 228 2 compt. agg. w/TY1220 cement unit
Erie—Strayer 2, 50 T. compts. 350 bbls. cement 750 bbl. silo.
Johnson TY-227 70 cu. yd. 105 ton 3 compt. aggr. bin TY168 batcher.
Blaw-Knox BCPC 600 bbl cement silo
Blaw-Knox BCPC 300 bbl cement bin
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1—Allis Chalmers 9' x 130' Rotary Kiln, ¾" shell.
4—Vulcan 8' x 125' Rotary Kiln, 5/8" shell.
1—Vulcan 8' x 87', ½" shell.
3—Louisville 8' x 50', ⅜" steel shell with 1/4" stainless steel lining.
2—Vulcan 7' x 80', ½" shell.
2—Vulcan 7' x 55', 5/8" shell.
2—Link Belt Roto Louvre Dryers, 6'4" x 24'
1—Rennenberg 6' x 50', ⅜" shell.
1—Rennenberg 5'6" x 50', ⅜" shell.
1—Ruggles Cole 5' x 30', class A-8, Indirect Heat Dryer, ⅜" shell.
1—Allis Chalmers 4' x 40'.
1—Allis Chalmers 4' x 30', ¾" shell.
2—Ruggles Cole 4' x 20', ⅜" shell.
1—Link Belt Roto Louvre Dryer, 3'10" x 20'.
1—34" x 30', 1/4" shell.
1—Traylor 30" x 18', 1/4" shell, 430 S.S.

MILLS—CRUSHERS—PULVERIZERS

2—Traylor Compeb Mill 7' x 27' with 1—500 HP & 1—600 HP motor 3/60/440.
1—Williams Hammermill, 300 HP.
1—Allis Chalmers 6' x 22' Tube Mill, 250 HP.
1—Smidth 6' x 20' Tube Mill, 300 HP.
1—Smidth 5'6" x 21' Tube Mill.
1—Hardinge 4½' x 24" Steel Conical Mill.
1—Denver 3' x 5' Continuous Ball Mill
1—Telsmith Reduction Crusher No. 46, 50 HP.
3—Kennedy 54" x 24" Two Roll Crushers.
2—Kennedy #6 Gyratory Crushers, 50 HP.
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1—Penn. Super-Thor Hammermill, size SXT13, 250 HP.
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1—Gayco 8' dia. mechanical Air Separator.
1—Raymond 30" dia. Whizzer Separator.
1—Dracco Dust Collecting System type DAAA-3 with Dracco Perfecto Filter #19 Clarage exhaust fan 2000 cfm, 10 HP motor.
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1—Robins 84" x 22' Feeder Conveyor, 15 HP.
1—Robins 24" x 14' Belt Conveyor, 3 HP.
1—Robins 18" x 30' Troughing Conveyor.
1—Fuller-Kinyon Conveying System type H257, 100 HP.
2—Fuller-Kinyon Conveying Systems type 10B-No. R, 75 HP.

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Complete Lime Hydrating plant.

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1—#60 Williams Roller Breaker Crushers. Due to voluntary liquidation, the two used hammermills are being offered for sale for $4,000.00 each, including with each unused tips, bars and parts which cost $3,100.00. Present new cost of each unit about $20,000.00.

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20 x 36 Austin-Western Jaw Crusher
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Mounted by factory new 2 years ago
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1—Corn vacuator—300 ft. 8" pipe.

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1—TL12 Diesel. 1⅛ cyd. struck level capacity, tractomotive front end loader, 600 hours used on stockpile loading only, excellent. Box R-30, Rock Products, 79 W. Monroe, Chicago 3, Illinois

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Cedar Rapids Commander Plant complete with tandem dolly, air brakes, shovel feed hopper with Allis-Chalmers power. Mounted on plant.
Telsmith 15-30 Primary jaw crusher with Dozer feed hopper, 30 in. x 40 ft. feed conveyor and 30 in. discharge conveyor powered by D-13000 Cat. mounted on plant.
Cat. D-7 with cable control Dozer.
¾ yd. 1020 unit with drag line, back hoe and shovel front.
K-6 International truck with van.

Must see this to appreciate.

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Please include in confidential reply all details relating to experience, education, compensation desired, etc. **Box R-28, Rock Products, 79 W. Monroe, Chicago 3, Ill.**

WANTED: Service and Erection Representative having experience with Crushing, Cement and Lime Plant Machinery. Box R-22, Rock Products, 79 W. Monroe, Chicago 3, Ill.

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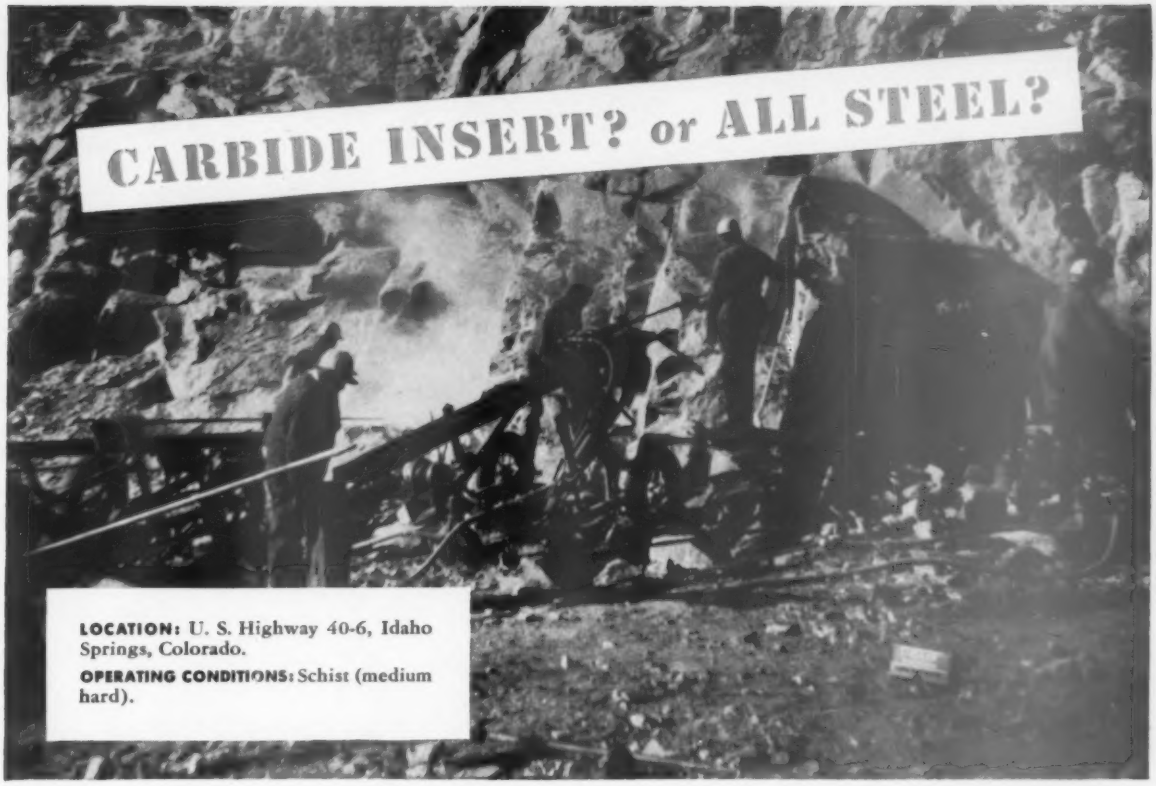

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